No 2465
2

The LADIES' *Diary:*

OR

WOMAN's ALMANACK,

For the Year of our LORD 1780;
Being BISSEXTILE, or LEAP-YEAR,
Containing New Improvements in ARTS and SCIENCES,
And many Entertaining PARTICULARS:
Deſigned for the *Uſe* and *Diverſion* of the

FAIR-SEX.

The Seventy-ſeventh ALMANACK Publiſhed of this Kind.

Virtue and Sense, with Female-Softness join'd,
(All that ſubdues and captivates Mankind!)
n Britain's Matchleſs Fair reſplendent ſhine;
They rule Love's Empire by a Right Divine:
uſtly their Charms the aſtoniſh'd World admires,
Whom *Royal* CHARLOTTE's bright Example fires.

Printed for the COMPANY of STATIONERS,
And ſold by GEORGE HAWKINS, at their Hall, in Ludgate-Street.

[Price, ſtitched, NINE-PENCE.]

CHRONOLOGY of REMARKABLE EVENTS.

Y. of Chriſt.		*Ys. ſince.*
1600	KING *Charles* I. born	180
1603	Q. *Elizabeth* died, King *James* ſucceeded -	177
1603	A great Plague in *London*	177
1605	Popiſh Gun-powder Plot -	175
1625	King *James* died, and K. *Charles* I. ſucceeded - -	155
1641	Bloody *Iriſh* Maſſacre -	139
1642	*Edge-hill* Fight - - -	138
1643	*Newbury* Fight - - -	137
1644	*Marſton-Moor* Fight - -	136
1645	Battle of *Naſeby* - -	135
1649	King *Charles* I. beheaded	131
1651	Fight of *Worceſter* - -	129
1658	*Oliver Cromwell* died - -	122
1660	King *Charles* II. reſtored -	120
1665	Laſt great Plague in *London*, whereof died 68,586 Perſons - - - - -	115
1566	Great Fire in *London* - -	114
1685	King *Charles* II. died, King *James* II. ſucceeded - -	95
1685	D. of *Monmouth* beheaded	95
1688	Prince of *Orange* landed -	92
1688	King *James* II. abdicated	92
1689	King *William* and Queen *Mary* crowned - -	91
1702	K. *Will.* died, Q. *Ann* ſucc.	78
1702	War againſt *France* declared	78
1703	Terrible Wind, *Nov.* 26 -	77
1704	*Gibraltar* taken - - -	76
1704	*French* beat at *Hochſtet* -	76
1706	*French* beat at *Ramellies* - -	74
1707	*England* and *Scotland* united	73
1708	*French* beat at *Oudenard* -	72
1709	*French* beat at *Blarquies* -	71
1713	Peace with *France* procl. -	67
1714	Queen *Ann* died, and King *George* I. ſucceeded - -	66
1715	Rebellion in the *North* -	65
1716	A very great Froſt - -	64
1727	King *George* I. died, and K. *George* II. ſucceeded - -	53
1739	The laſt great Froſt - -	41
1739	War againſt *Spain* declared	41
1743	A great Comet appeared -	37
1744	War againſt *France* declared	36
1745	Rebellion in *Scotland* - -	35
1748	A general Peace - - -	32
1752	New Stile firſt uſed in *Engl.*	28
1756	War againſt *France* declared	24
1760	King *George* II. died, and King *George* III. ſucceeded	20
1762	War againſt *Spain* declared	18
1763	Peace with *France* and *Spain* proclaimed - - - -	17

BIRTH-DAYS, [N.S.] and YEARS, of the ROYAL FAMILY of GREAT-BRITAIN.

KING GEORGE III. *June* 4,	1738
Prince of *Wales*, *Auguſt* 12,	1762
Prince *Frederick*, *Auguſt* 16, -	1763
Prince *William Henry*, *Aug.* 21,	1765
Prs. *Charl. Aug. Mat. Sept.* 29,	1766
Prince *Edward*, *Nov.* 2, - -	1767
Prs. *Auguſta Sophia*, *Nov.* 8,	1768
Prs. *Elizabeth*, *May* 22, - -	1770
Prince *Erneſt Auguſtus*, *June* 5,	1771
Prince *Aug. Fred. Jan.* 27, -	1773
Prince *Adolph. Fred. Feb.* 24,	1774
Princeſs *Mary*, *April* 25, -	1776
Princeſs *Sophia*, *Nov.* 3, -	1777
Prince *Octavius*, *Feb.* 23, - -	1779
Queen *Charlotte*, *May* 19, - -	1744
Prs. *Amelia*, *June* 10, - -	1711
Prs. *Auguſta* of *Brunſw. Aug.* 11,	1737
Duke of *Glouceſter*, *Nov.* 25, -	1743
Duke of *Cumberland*, *Nov.* 7,	1745

YEARS of BIRTHS of the Principal SOVEREIG PRINCES of EUROPE.

CHA. Frederick, King of *Pruſſia*,	1712
Ahmet, Grand Seignor -	1715
Charles, King of *Spain* - -	1716
Maria Thereſa, Q. *Hung.* & *Boh.*	1717
Pius VI. Pope - - - -	1717
Victor Amada Maria, K. *Sardinia*	1726
Catherine, Empreſs of *Ruſſia*, -	1729
Staniſlaus Aug. King of *Poland*	173
Maria, Queen of *Portugal* - -	173
Joſeph Ben. Aug. Emp. *Germ.*	174
Guſtavus, King of *Sweden*, - -	174
William V. Stadtholder, - -	174
Chriſtian VII, King of *Denmark*,	174
Lewis XVI. King of *France*, -	17

N° 77. January hath XXXI Days.

New Moon, 6th, 49 m. paſt 4 aftern.
Firſt Quarter, 14th, 14 m. paſt 9 night.
Full Moon, 21ſt, 41 m. paſt 6 even.
Laſt Quarter, 28th, 50 m. paſt 10 morn.

Sun enters ♒ 19 d. 20h. 23m.

1	S	Circumciſion	8	5	3	55	23ſ	2	2 m	37	26
2	B	2 Sunday after Chriſtmas		4		56	22	57	3	55	27
3	M			4		56		51	5	10	28
4	Tu			3		57		45	6	22	29
5	W	Old Chriſtmas Day		2		58		38	7	25	30
6	Th	Epiphany: Twelfth-Day		1		59		31	☽ ſets		1
7	F			0	4	0		24	4 a	24	2
8	S	*Lucian.*		0		0		16	5	32	3
9	B	1 Sunday after Epiphany	7	59		1		8	6	42	4
10	M	*Plow Monday.*		58		2	21	59	7	52	5
11	Tu			57		3		50	9	2	6
12	W	Old New-Year's Day		56		4		40	10	12	7
13	Th	*Hilary.* Cam. Ter. beg.		54		6		30	11	21	8
14	F	Oxf. Term begins		53		7		20	Morn.		9
15	S			52		8		9	0	34	10
16	B	2 Sunday after Epiphany		51		9	20	58	1	48	11
17	M	Old Twelfth-Day		50		10		46	3	6	12
18	Tu	Q.Ch.Birth-d.kept. *Priſca*		48		12		34	4	28	13
19	W			47		13		21	5	47	14
20	Th	*Fabian.* Hil. T. 1 Ret.		46		14		9	6	56	15
21	F	*Agnes.*		44		16	19	55	☽ riſes		16
22	S	*Vincent.*		43		17		42	5 a	9	17
23	B	Septuageſima Sunday.		41		19		28	6	41	18
24	M	Hilary Term begins		40		20		14	8	10	19
25	Tu	Converſion of St. Paul		38		22	18	59	9	35	20
26	W			37		23		44	10	57	21
27	Th	Pr. Aug. Fred. bo. 1773.		35		25		29	Morn.		22
28	F	[Hil. T. 2 Ret.		34		26		13	0	16	23
29	S			32		28	17	57	1	34	24
30	B	K. Cha. I. behead. 1649.		31		29		41	2	51	25
31	M	[Sexag. S.		29		31		24	4	r	26

Days	L. of D.	Day Inc.	D. breaks	Sun Eaſt	Tw. ends	Cl. bef. S.	7 Stars So.
1	7 50	0 6	6 0	4 41	6 0	4′ 0″	8 af 45
6	58	14	5 58	43	2	6 18	23
11	8 6	22	54	46	6	8 24	1
16	18	34	49	49	11	10 14	7 40
21	32	48	44	53	16	11 47	19
26	46	1 2	38	57	22	13 0	6 57

February hath XXIX Days.

New Moon, 5th, 57 m. paſt 11 morn.
Firſt Quarter, 13th, 27 m. paſt 12 noon.
Full Moon, 20th, 46 m. paſt 4 morn.
Laſt Quarter, 27th, 1 m. paſt 2 morn.

Sun enters ♓
18 d. 11 h. 15 m.

MD	WD	Sundays, Holydays, &c.	Sun riſes	Sun ſets	Sun's Decl.	☾ riſes & ſets	☾'s Age
1	Tu		7 27	4 33	17 7	5 m 12	27
2	W	Purif. or Candlemas-day	26	34	16 50	6 9	28
3	Th	*Blaſe.* Hil. Term. 3 Ret.	24	36	32	6 55	29
4	F		22	38	15	7 30	30
5	S	*Agatha.*	20	40	15 57	☾ ſets	1
6	B	Quinquageſima	19	41	38	5 a 35	2
7	M		17	43	20	6 46	3
8	Tu	Shrove-Tueſday	15	45	1	7 57	4
9	W	Aſh-Wedneſday. Hil. 4	13	47	14 41	9 5	5
10	Th	[Ret.	11	49	22	10 17	6
11	F		9	51	2	11 28	7
12	S	Hilary Term ends	8	52	13 43	Morn.	8
13	B	1 S. in Lent. Quadrag. Old	6	54	23	0 44	9
14	M	*Valentine* [Candl.-day	4	56	2	2 1	10
15	Tu		2	58	12 42	3 20	11
16	W	Ember Week	0	5 0	21	4 33	12
17	Th		6 58	2	0	5 35	13
18	F		56	4	11 39	6 26	14
19	S		55	5	18	7 2	15
20	B	2 Sunday in Lent	53	7	10 56	☾ riſes	16
21	M		51	9	35	7 a 3	17
22	Tu		49	11	13	8 29	18
23	W	Pr. Octavius bo. 1779.	47	13	9 51	9 54	19
24	Th	St. Matthias. Pr. Ad. Fr. b.	45	15	29	11 17	20
25	F	[1774.	43	17	7	Morn.	21
26	S		41	19	8 44	0 37	22
27	B	3 Sunday in Lent	39	21	22	1 54	23
28	M		37	23	7 59	3 6	24
29	Tu		35	25	37	4 6	25

Days	L. of D.	Day Inc	D. breaks	Sun Eaſt	Tw. ends	Cl. bef. S.	7 Stars So.
1	9 6	1 22	5 32	5 3	6 28	14′ 2″	6 at 34
6	22	38	24	9	36	32	13
11	42	58	16	14	44	41	5 53
16	10 0	2 16	7	21	53	30	34
21	18	34	4 58	27	7 2	1	15
26	38	54	49	33	11	13 16	4 56

March hath XXXI Days.

New Moon, 6th, 26 m. paſt 6 morn.
Firſt Quarter, 13th, 58 m. paſt 11 night.
Full Moon, 20th, 31 m. paſt 2 aftern.
Laſt Quarter, 27th, 19 m. paſt 7 even.

Sun enters ♈
19 d. 11 h. 43 m.

1	W	*David.*	6	33	5	27	7	ſ 14	4	m 56	26
2	Th	*Chad.*		31		29	6	51	5	36	27
3	F			29		31		28	6	4	28
4	S			27		33		5	6	25	29
5	A	4 or Midlent Sunday		25		35	5	41	6	42	30
6	M			23		37		18	☾	ſets	1
7	Tu	*Perpetua.*		21		39	4	55	7	a 0	2
8	W			19		41		31	8	11	3
9	Th			17		43		8	9	24	4
10	F			15		45	3	44	10	39	5
11	S			13		47		21	11	55	6
12	A	5 Snuday in Lent. *Gregory.*		11		49	2	57	Morn.		7
13	M			9		51		34	1	14	8
14	Tu			7		53		10	2	27	9
15	W			5		55	1	46	3	31	10
16	Th			3		57		23	4	25	11
17	F	*St. Patrick.* Camb. Term ends		1		59	0	59	5	4	12
18	S	*Ed. K.W.S.* Oxf. T. ends	5	59	6	1		35	5	34	13
19	A	6 S. in Lent, Palm-Sund.		57		3		12	6	7	14
20	M			55		5	n	12	☾	riſes	15
21	Tu	*Benedict.*		53		7		36	7	a 29	16
22	W			51		9		59	8	56	17
23	Th	*Maunday-Thurſday.*		49		11	1	23	10	21	18
24	F	Good-Friday		47		13		47	11	43	19
25	S	Annunc. or Lady-Day		46		14	2	10	Morn.		20
26	A	Eaſter-Day		44		16		34	1	0	21
27	M	Eaſter-Monday		42		18		57	2	7	22
28	Tu	Eaſter-Tueſday		40		20	3	20	3	2	23
29	W			38		22		44	3	45	24
30	Th			36		24	4	7	4	16	25
31	F			34		26		30	4	40	26

Days	L. of D.		Day Inc.		D.breaks		Sun Eaſt		Tw. ends		Cl. bef. S.		7 Stars So.	
1	10	54	3	10	4	42	5	37	7	18	12′	30″	4 af	41
6	11	14		30		31		43		29	11	22		23
11		34		50		20		49		40	10	4		5
16		54	4	10		10		56		50	8	38	3	46
21	12	14		30		0	6	1	8	0	7	7		28
26		32		48	3	48		8		12	5	34		10

April hath XXX Days.

New Moon, 4th, 1 m. paſt 11 night.
Firſt Quarter, 12th, 1 m. paſt 8 morn.
Full Moon, 18th, 28 m. paſt 12 night.
Laſt Quarter, 26th, 29 m. paſt 1 aftern.

Sun enters ♉
19 d. 0 h. 31 m.

1	S		5	32	6	28	4 n	53	5 m	0	27
2	A	1 S. aſt. Eaſt. Low-Sund.		30		30	5	16	5	14	28
3	M	*Richard.*		28		32		39	5	23	29
4	Tu	*St. Ambroſe*		26		34	6	2	☾	ſets	1
5	W	Old Lady-Day. Oxf. &		24		36		25	7 a	26	2
6	Th	[Cam. Ter. beg.		22		38		47	8	36	3
7	F			20		40	7	10	9	53	4
8	S			18		42		32	11	12	5
9	A	2 Sunday after Eaſter		16		44		55	Morn.		6
10	M	**Eaſter Term, 1 Return**		14		46	8	17	0	27	7
11	Tu			12		48		39	1	34	8
12	W	Eaſter Term begins		10		50	9	0	2	31	9
13	Th			8		52		22	3	14	10
14	F			6		54		44	3	46	11
15	S			5		55	10	5	4	10	12
16	A	3 Sunday after Eaſter		3		57		26	4	29	13
17	M	**Eaſter Term, 2 Return**		1		59		47	4	45	14
18	Tu		4	59	7	1	11	8	☾	riſes	15
19	W	*Alphege.*		57		3		29	7 a	58	16
20	Th			55		5		49	9	22	17
21	F			53		7	12	9	10	45	18
22	S			51		9		30	11	59	19
23	A	St. George. 4 S. aſt. Eaſt.		50		10		49	Morn.		20
24	M	**Eaſter Term, 3 Return**		48		12	13	9	0	59	21
25	Tu	St. Mark. Prs. Mary bo.		46		14		29	1	51	22
26	W	[1776		44		16		48	2	26	23
27	Th			42		18	14	7	2	52	24
28	F			41		19		26	3	12	25
29	S			39		21		44	3	27	26
30	A	5 S. aſt. Eaſt. Rog. Sund.		37		23	15	2	3	41	27

ays	L. of D.		Day Inc.		D. breaks		Sun Eaſt		Tw. ends		Cl. bef. S.		7 Stars So.	
1	12	56	5	12	3	31	6	16	8	31	3′	43″	2 at	48
6	13	16		32		19		22		43	2	13		30
11		36		52		4		28		58	0	50		11
16		54	6	10	2	52		34	9	11	0 a	27	1	53
21	14	14		30		38		39		25	1	35		34
26		32		48		23		45		40	2	31		15

N° 77. May hath XXXI Days.

New Moon, 4th, 54 m. paſt 12 noon.
Firſt Quarter, 11th, 32 m. paſt 1 aftern.
Full Moon, 18th, 8 m. paſt 11 morn.
Laſt Quarter, 26th, 25 m. paſt 7 morn.

Sun enters ♊
20d. 1h. 11 m.

1	M	St. Phil. & St. James. Eaſt.	4	35	7	25	15n	21	3 m	53	28
2	Tu	[Term, 4 Ret.		34		26		38	4	6	29
3	W	*Invention of the Croſs*		32		28		56	4	18	30
4	TH	Aſcenſ. Hoſ.-Thurſ. ☉ ecl.		30		30	16	13	☾ ſets		1
5	F	Eaſter Ter. 5 Ret. [inviſ.		28		32		30	9 a	1	2
6	S	*John Ev. ante Port. Lat.*		27		33		47	10	20	3
7	A	Sunday after Aſcenſion		25		35	17	3	11	31	4
8	M	Eaſter Term ends		23		37		20	Morn.		5
9	Tu			22		38		36	0	33	6
10	W			20		40		51	1	21	7
11	TH	Oxf. Term ends		19		41	18	6	1	55	8
12	F	Old May Day		17		43		21	2	21	9
13	S			16		44		36	2	41	10
14	A	Whit-Sunday		14		46		51	2	57	11
15	M	Whit-Monday		13		47	19	5	3	10	12
16	Tu	Whit-Tueſday		11		49		18	3	23	13
17	W	Ember Week		10		50		32	3	41	14
18	TH	☾ eclipſed, inviſible.		8		52		45	☾ riſes		15
19	F	Q. Charl. b. 1744. *Dunſtan*		7		53		58	9 a	41	16
20	S			6		54	20	10	10	48	17
21	A	Trinity Sunday		4		56		22	11	43	18
22	M	Prs. Eliz. bo. 1770. Trin.		3		57		34	Morn.		19
23	Tu	[1 Ret.		2		58		45	0	25	20
24	W	Oxf. Term begins		1		59		56	0	55	21
25	TH	*Corpus Chriſti*	3	59	8	1	21	7	1	16	22
26	F	Trin. Term beg. *Auguſtine*		58		2		17	1	34	23
27	S	*Venerable Bede* [*Abp.*		57		3		27	1	47	24
28	A	1 Sunday after Trinity		56		4		37	2	0	25
29	M	K. Charles II. Reſt. 1660.		55		5		46	2	13	26
30	Tu	[Trin. 2 Ret.		54		6		55	2	24	27
31	W			53		7	22	3	2	38	28

Days	L. of D.		Day Inc.		D. breaks		Sun Eaſt		Tw. ends		Cl. aft S.		7 Stars So.	
1	14	50	7	6	2	5	6	50	9	59	3′	14″	0 af	56
6	15	6		22	1	51		55	10	13		43		37
11		22		38		29	7	0		35		58		18
16		38		54		6		5		59		59	11 m	58
21		52	8	8	0	30		9	11	36		47		39
26	16	4		20	No Night.			12	No Night.			21		19

June hath XXX Days.

New Moon, 2d, 56 m. paſt 11 night.
Firſt Quarter, 9th, 2 m. paſt 6 even.
Full Moon, 16th, 51 m. paſt 10 night.
Laſt Quarter, 24th, 16 m. paſt 12 night.

Sun enters ♋
20 d. 9 h. 57 m.

1	TH	*Nicomede*	3 52	8 8	22 n 11	2 m 56	29
2	F		51	9	19	☾ ſets	1
3	S	[Trin.	50	10	26	8 a 57	2
4	A	K.G.III.b.1738. 2 S.aft.	49	11	33	10 21	3
5	M	Pr.Er.Aug.b.1771. *Bonif.*	49	11	39	11 15	4
6	TU	[Trin. T. 3 Ret.	48	12	45	11 54	5
7	W		47	13	51	Morn.	6
8	TH		47	13	56	0 22	7
9	F		46	14	23 1	0 44	8
10	S	Prs. Amelia born, 1711.	46	14	6	1 1	9
11	A	3 S. aft. Trin. St. Barnabas	45	15	10	1 16	10
12	M	Trinity Term, 4 Ret.	45	15	14	1 31	11
13	TU		44	16	17	1 44	12
14	W	Trinity Term ends	44	16	20	2 1	13
15	TH		44	16	22	2 24	14
16	F		43	17	24	☾ riſes	15
17	S	*St. Alban*	43	17	26	9 a 28	16
18	A	4 Sunday after Trinity	Longeſt Day, at *Lond.* is 16 h. 34 m. 4 ſec.	allowing 9 m. 16 ſec. for Refraction.	27	10 17	17
19	M				28	10 52	18
20	TU	*Tranſ. Edw. K.W.S.*			28	11 16	19
21	W	Longeſt Day			28	11 35	20
22	TH				28	11 50	21
23	F				27	Morn.	22
24	S	Nativ. of St. John Baptiſt			26	0 2	23
25	A	5 Sunday after Trinity	43	17	24	0 13	24
26	M		44	16	22	0 23	25
27	TU		44	16	19	0 38	26
28	W		44	16	16	0 54	27
29	TH	St. Peter	45	15	13	1 15	28
30	F		45	15	9	1 43	29

Days	L. of D.	Day Inc.		Sun Eaſt		Cl. aft. S.	7 Stars So.
1	16 16	8 32	No real Night, but conſtant Day-light or Twilight.	7 16	No real Night, but conſtant Day-light or Twilight.	2′ 33″	10 m 54
6	24	40		18		1 43	34
11	30	46		19		0 45	14
16	34	50		20		0 b 18	9 55
21	34	50		21		1 22	32
26	32	Decr. 2		20		2 25	12

July hath XXXI Days.

New Moon, 2d, 34 m. paſt 8 morn.
Firſt Quarter, 8th, 15 m. paſt 11 night.
Full Moon, 16th, 59 m. paſt 11 morn.
Laſt Quarter, 24th, 37 m. paſt 3 aftern.
New Moon, 31ſt, 52 m. paſt 3 aftern.

Sun enters ♌
21 d. 20 h. 48 m.

1	S		3 46	8 14	23 n 5	2 m 21	30
2	A	6 S. aft. Trin. *Viſ. V. M.*	46	14	1	☾ ſets	1
3	M	Dog-days begin	47	13	22 56	9 a 52	2
4	Tu	*Tranſ. St. Mart.* **Ca.** Com.	47	13	50	10 18	3
5	W	Old Midſummer Day	48	12	45	10 42	4
6	Th		49	11	38	11 1	5
7	F	**Camb.** Term ends	50	10	32	11 18	6
8	S	**Oxford** Act	50	10	25	11 32	7
9	A	7 Sunday after Trinity	51	9	18	11 47	8
10	M		52	8	10	Morn.	9
11	Tu		53	7	2	0 2	10
12	W		54	6	21 53	0 21	11
13	Th		55	5	45	0 47	12
14	F		56	4	35	1 24	13
15	S	*Swithin.* **Oxf.** Term ends	57	3	26	2 12	14
16	A	8 Sunday after Trinity	58	2	16	☾ riſes	15
17	M		59	1	6	9 a 15	16
18	Tu		4 1	7 59	20 55	9 35	17
19	W		2	58	44	9 51	18
20	Th	*Margaret*	3	57	33	10 3	19
21	F		4	56	21	10 16	20
22	S	*St. Mary Magdalen*	6	54	9	10 28	21
23	A	9 Sunday after Trinity	7	53	19 57	10 39	22
24	M		8	52	44	10 53	23
25	Tu	St. James, Apoſtle	10	50	31	11 12	24
26	W	*St. Anne, Mo. of V. M.*	11	49	17	11 36	25
27	Th		13	47	4	Morn.	26
28	F		14	46	18 50	0 9	27
29	S		16	44	35	0 56	28
30	A	10 Sunday after Trinity	17	43	21	2 1	29
31	M		19	41	6	☾ ſets	1

Days	L. of D.	Day dec.	D. breaks	Sun Eaſt	Tw. ends	Cl. bef. S.	7 Stars So.
1	16 28	0 6		7 19		3′ 26″	8 m 51
6	22	12	No real Night.	17	No real Night.	4 19	31
11	14	20		15		5 4	10
16	4	30		12		36	7 50
21	15 52	42		9		58	30
26	38	56	0 46	5	11 11	6 2	10

Auguſt hath XXXI Days.

Firſt Quarter,	7th,	39 m. paſt	6 morn.	*Sun* enters ♍
Full Moon,	15th,	44 m. paſt	2 morn.	22 d. 3 h. 8 m.
Laſt Quarter,	23d,	7 m. paſt	5 morn.	
New Moon,	29th,	7 m. paſt	11 night.	

1	Tu	Lammas.	4	20	7	40	17n	51	8 a 46
2	W			22		38		35	9 3
3	Th			24		36		19	9 20
4	F			25		35		3	9 36
5	S			27		33	16	47	9 51
6	A	11S.aft.Trin. *Transfigur.*		29		31		30	10 8
7	M			30		30		13	10 26
8	Tu			32		28	15	56	10 51
9	W			34		26		39	11 23
10	Th	*St. Lawrence*		35		25		21	Morn.
11	F	Pr.Brunſ.bo.1737.DogDa.end		37		23		3	0 8
12	S	Pr.of Wales b. 1762. Old		39		21	14	45	1 2
13	A	12S.aft.Trin. [Lam.-Day		40		20		27	2 6
14	M			42		18		8	3 17
15	Tu			44		16	13	49	☾ riſes
16	W	Pr.Fred. born 1763		46		14		30	8 a 13
17	Th			48		12		11	8 25
18	F			49		11	12	52	8 37
19	S			51		9		32	8 48
20	A	13 Sunday after Trinity		53		7		12	9 2
21	M	Pr. Wm. Henr. bo. 1765		55		5	11	52	9 18
22	Tu			57		3		32	9 38
23	W			59		1		11	10 6
24	Th	St.Bartholomew, Apoſtle	5	0		0	10	51	10 47
25	F			2	6	58		30	11 42
26	S			4		56		9	Morn.
27	A	14 Sunday after Trinity		6		54	9	48	0 54
28	M	*St. Auguſtine*		8		52		27	2 19
29	Tu	*St. John Bapt. beheaded*		10		50		5	☾ ſets
30	W			12		48	8	44	7 a 29
31	Th			14		46		22	7 44

Days	L. of D.		Day dec.		D. breaks		Sun Eaſt		Tw. ends		Cl. bef. S.		7 Stars
1	15	20	1	14	1	24	6	59	10	33	5′	50″	6 m
6		2		32		44		54		13		24	
11	14	46		48	2	2		49	9	56	4	42	
16		28	2	6		20		44		38	3	46	5
21		10		24		35		38		23	2	38	
26	13	56		38		50		33		9	1	19	

September hath XXX Days.

Firſt Quarter,	5th,	20 m.	paſt 5 aftern.		Sun enters ♎
Full Moon,	13th,	57 m.	paſt 6 aftern.		21d. 23 h. 31 m.
Laſt Quarter,	21ſt,	32 m.	paſt 4 aftern.		
New Moon,	28th,	23 m.	paſt 7 morn.		

1	F	*Giles.*	5 16	6 44	8 n 0	8 a 1	4
2	S	London burnt 1666, O.S.	18	42	7 38	8 17	5
3	A	15 Sunday after Trinity	19	41	16	8 35	6
4	M		21	39	6 54	8 59	7
5	Tu		23	37	31	9 29	8
6	W		25	35	9	10 10	9
7	Th	*Enurchus*	27	33	5 46	11 3	10
8	F	*Nativity of V. Mary*	29	31	24	Morn.	11
9	S		31	29	1	0 4	12
10	A	16 Sunday after Trinity	33	27	4 38	1 14	13
11	M		35	25	15	2 27	14
12	Tu		37	23	3 52	3 40	15
13	W		39	21	29	☾ riſes	16
14	Th	*Holy-Croſs*	41	19	6	6 a 53	17
15	F		43	17	2 43	7 5	18
16	S		45	15	20	7 18	19
17	A	17 S. aft. Trin. *Lambert*	47	13	1 56	7 33	20
18	M		49	11	33	7 52	21
19	Tu		51	9	10	8 16	22
20	W	Ember Week	53	7	0 46	8 50	23
21	Th	St. Matthew, Apoſtle	54	6	23	9 38	24
22	F	K. Geo. III. Cor. 1761	56	4	0	10 40	25
23	S		58	2	ſ24	11 57	26
24	A	18 Sunday after Trinity	6 0	0	47	Morn.	27
25	M		2	5 58	1 11	1 24	28
26	Tu	*St. Cyprian*	4	56	34	2 55	29
27	W		6	54	58	4 27	30
28	Th	[Mat. bo. 1766.	8	52	2 21	☾ ſets	1
29	F	St. Michael. Prs. Ch. Aug.	10	50	45	6 a 27	2
30	S	*St. Jerome.*	12	48	3 8	6 47	3

Days	L. of D.	Day dec.	D. breaks	Sun Eaſt	Tw. ends	Cl. aft. S.	7 Stars So.
1	13 28	3 6	3 7	6 26	8 53	0′ 28″	4 m 50
6	10	24	21	20	39	2 6	32
11	12 50	44	34	14	26	3 48	14
16	30	4 4	45	7	15	5 33	3 56
21	12	22	56	1	4	7 18	39
26	11 52	42	4 7	5 55	7 53	9 0	21

October hath XXXI Days.

First Quarter, 5th, 48 m. paſt 7 morn.
Full Moon, 13th, 1 m. paſt 12 noon.
Laſt Quarter, 21ſt, 58 m. paſt 1 morn.
New Moon, 27th, 26 m. paſt 5 aftern

Sun enters ♏
22 d. 7 h. 21 m.

1	A	19 S. aſt. Trin. *Remigius*	6	14	5	46	3	31	7 a 7	4
2	M			16		44		55	7 34	5
3	Tu			18		42	4	18	8 13	6
4	W			20		40		41	9 3	7
5	Th			22		38	5	4	10 3	8
6	F	*Faith*		24		36		27	11 9	9
7	S			26		34		50	Morn.	10
8	A	20 Sunday after Trinity		28		32	6	13	0 21	11
9	M	*St. Denys*		30		30		36	1 35	12
10	Tu	Old Mic. Day. **Oxf.** and		32		28		59	2 48	13
11	W	[**Cam.** T. begin		34		26	7	21	3 58	14
12	Th			36		24		44	5 9	15
13	F	*Tr. of K. Edw. Confeſſor*		38		22	8	6	☾ riſes	16
14	S			40		20		29	5 a 47	17
15	A	21 Sunday after Trinity		42		18		51	6 4	18
16	M			43		17	9	13	6 27	19
17	Tu	*Ethеldred*		45		15		35	6 57	20
18	W	St. Luke, Evangeliſt		47		13		57	7 39	21
19	Th			49		11	10	19	8 38	22
20	F			51		9		40	9 46	23
21	S			53		7	11	2	11 8	24
22	A	22 Sunday after Trinity		55		5		23	Morn.	25
23	M			57		3		44	0 36	26
24	Tu			59		1	12	5	2 3	27
25	W	K. Geo. III. Acc. *Criſpin*	7	1	4	59		25	3 33	28
26	Th	K. Geo. III. Procl. 1760.		2		58		46	5 0	29
27	F			4		56	13	6	☾ ſets	1
28	S	St. Simon *and* St. Jude		6		54		26	5 a 11	2
29	A	23 Sunday after Trinity		8		52		46	5 37	3
30	M			10		50	14	6	6 9	4
31	Tu			12		48		25	6 56	5

Days	L. of D.		Day dec.		D. breaks		Sun Eaſt		Tw. ends		Cl. aft. S.		7 Stars So.	
1	11	32	5	2	4	19	5	49	7	41	10′	36″	3 m	3
6		12		22		30		43		30	12	5	2	45
11	10	52		42		40		36		20	13	24		26
16		34	6	0		50		30		10	14	31		7
21		14		20		59		24		1	15	23	1	49
26	9	58		36	5	8		18	6	52		57		28

November hath XXX Days.

ſt Quarter, 4th, 48 m. paſt 1 morn.
ll Moon, 12th, 41 m. paſt 4 morn.
ſt Quarter, 19th, 1 m. paſt 10 morn.
w Moon, 26th, 37 m. paſt 5 morn.

Sun enters ♐
21 d. 3 h. 28 m.

W	All Saints	7 13	4 47	14ſ 44	7 a 53	6
Th	Pr.Edw.b.1767. *All Souls*	15	45	15 3	8 57	7
F	Prs.Soph. b.1777. Mich.	17	43	22	10 11	8
S	[T. 1 Ret.	19	41	40	11 24	9
A	Powd.Plot. 24 S.aft.Trin.	21	39	59	Morn.	10
M	Mich. Term beg. *Leonard*	22	38	16 17	0 37	11
Tu	Duke of Cumb. b. 1745	24	36	34	1 47	12
W	Prs. Aug. Soph. b. 1768	26	34	52	2 58	13
Th	Ld. Mayor's Day at *Lond.*	27	33	17 9	4 7	14
F		29	31	25	5 18	15
S	*St. Martin*	31	29	42	6 30	16
A	25 S. aft. Trin. Mic.T. 2	32	28	58	☾ riſes	17
M	*Britius* [Ret. ☾ ecl. viſ.	34	26	18 14	4 a 56	18
Tu		35	25	29	5 38	19
W	*Machutus*	37	23	45	6 31	20
Th		38	22	19 0	7 37	21
F	*Hugh, Bp. Lincoln.*	40	20	14	8 52	22
S	Mich. Term, 3 Return	41	19	28	10 17	23
A	26 Sunday after Trinity	43	17	42	11 43	24
M	*Edmund, K. & M.*	44	16	56	Morn.	25
Tu		46	14	20 9	1 8	26
W	*Cecilia.* Old Mart. Day	47	13	21	2 33	27
Th	*St. Clement*	48	12	34	3 58	28
F	[4 Ret.	50	10	46	5 26	29
S	D.of Gl. b.1743. Mic.T.	51	9	57	6 51	30
A	27 Sunday after Trinity	52	8	21 9	☾ ſets	1
M		53	7	19	4 a 38	2
Tu	Michaelmas Term ends	54	6	39	5 32	3
W		56	4	40	6 34	4
Th	St. Andrew	57	3	49	7 45	5

ys	L. of D.	Day dec.	D. breaks	Sun Eaſt	Tw. ends	aft. S	7 Stars S
1	9 34	7 0	5 17	5 12	6 43	16' 14'	1 m 7
6	16	18	24	6	36	6	0 47
1	8 58	36	30	1	30	15 37	27
6	46	48	36	4 56	24	14 48	6
1	28	8 6	43	52	17	13 37	11 af 41
6	16	18	49	48	11	12 6	20

December hath XXXI Days. 1780.

First Quarter, 3d, 30 m. past 10 night.
Full Moon, 11th, 54 m. past 7 night.
Last Quarter, 18th, 35 m. past 5 even.
New Moon, 25th, 55 m. past 7 night.

Sun enters ♑
20 d. 15 h. 46 m.

1	F		7	58	4	2	21 ♐	59	8 a	59	6
2	S			59		1	22	7	10	12	7
3	A	Advent Sunday	8	0		0		16	11	23	8
4	M			0		0		24	Morn.		9
5	Tu			1	3	59		31	0	34	10
6	W	*Nicholas*		2		58		38	1	42	11
7	Th			3		57		45	2	53	12
8	F	*Conception of Virgin M.*		4		56		51	4	5	13
9	S			4		56		56	5	18	14
10	A	2 Sunday in Advent		5		55	23	2	6	32	15
11	M			5		55		6	☾ rises		16
12	Tu			6		54		11	4 a	14	17
13	W	*Lucy*		6		54		14	5	17	18
14	Th			7		53		18	6	30	19
15	F			7		53		21	7	54	20
16	S	*O Sapientia.* Cam. T. ends		7		53		23	9	19	21
17	A	3 Sunday in Advent		8		52		25	10	44	22
18	M	Oxf. Term ends.	Shortest D. at *Lond.* is 7 h. 44 m. 17 ſ.		allowing 9m. 5ſ. for Refraction.			27	Morn.		23
19	Tu							28	0	7	24
20	W	Ember Week						28	1	29	25
21	Th	St. Thomas. Shortest Day						28	2	55	26
22	F							28	4	18	27
23	S							27	5	43	28
24	A	4 Sunday in Advent		8		52		26	7	5	29
25	M	Christmas Day		7		53		24	☾ sets		1
26	Tu	St. Stephen		7		53		21	4 a	6	2
27	W	St. John		7		53		19	5	11	3
28	Th	Innocents		6		54		15	6	26	4
29	F			6		54		12	7	40	5
30	S			5		55		8	8	55	6
31	A	S. aft. Christm. *Silvester*		5		55		3	10	5	7

Days	L. of D.		Day dec.		D. breaks		Sun East		Tw. ends		Cl. aft. S.		7 Stars So.	
1	8	4	8	30	5	55	4	45	6	5	10′	17″	10 at	59
6	7	56		38		58		43		2	8	13		37
11		50		44		59		41		1	5	57		15
16		46		48	6	0		40		0	3	32	9	53
21		44		50		1		39	5	59	1	3		31
26		46	Incr. 2			0		40	6	0	1 b	28		9

CHRONOLOGICAL NOTES, &c. in 1780.

minical Letters	B A.	Shrove-Tueſday	Feb. 8.
lden Number	14.	Eaſter-Day	Mar. 26.
act	23.	Whit-Sunday	May 14.
cle of the Sun	25.	Trinity-Sunday	May 21.
man Indiction	13.	Advent-Sunday	Dec. 3.

ECLIPSES, &c. in 1780.

THIS year furniſhes four eclipſes, viz. two of the ſun, and two of the moon; one of which only is viſible.——I. The firſt is a lar eclipſe, inviſible, on the 4th of *May*, at near one o'clock in the ternoon.——II. The ſecond is an inviſible lunar eclipſe, on the 18th *May*, near eleven in the morning.——III. The third is an inviſible lipſe of the ſun, *October* 27, near half paſt five in the afternoon.——V. The fourth is a viſible eclipſe of the moon, on the 12th of *Novem-r*, in the morning. It begins at 3 h. 7 m. and ends at ſix o'clock; e Digits eclipſed 7° 30′ on the ſouthern limb.——Mr. *Alex. Rowe* mputed this eclipſe for *London* and *Penzance*.

VENUS will be an Evening Star till the 10th of *Auguſt*, and after at a Morning Star till the end of the year.

JUPITER is a Morning Star till the 11th of *April*, then an Evening ar till *October* 31, and a Morning Star for the reſt of the year.

ANSWERS to the ENIGMAS.

I. NOON	IV. I	VII. BOW	X. WAFER
II. PEEP	V. RIVER	VIII. R	XI. NUMBER 3
II. SHEEP	VI. SHOE	IX. MUSHROOM	XII. *or Pr.* BUTTER

he Prize Enigma anſwered by the Rev. Mr. Thomas Baker.

e virtuous, undeſigning fair,
f falſe, gay, flatt'ring fops beware;
Deſpiſe their ſnaring arts:
Tho' 'ſoft as *Butter* are their words,'
You'll quickly find 'em 'very ſwords,'
To pierce your tender hearts.

The ſame anſwered by Miſs Molly Gurr.

or ſeven years paſt, or thereabout,
our choice enigmas I've found out,
At leaſt the greater part;
Shou'd *Butter* crown me with your [prize,
I'm ſure I need not advertiſe
Next year for a ſweetheart.

Mr. Robert Nelſon anſwers it thus.

n eloquent, pure, and harmonious lines,
Arabella, thy *Butter* unrivalled ſhines.

It is thus anſwered by Mr. J. Johnſon.

uſing o'er your pleaſing tale,
n ſearch of what you ſtrove to veil,
Lo! at that inſtant blooming Sue,
Kindly plac'd the prize in view.

Mr. T. Woolſton thus anſwers the ſame.

Whate'er happy place of this fair one may boaſt,
Her prize is ſweet *Butter*, herſelf be the Toaſt.

Sir Humphry Haſty anſwers it in the following lines.

Fair Arabella's tuneful numbers glide
Like a clear river's gently-ſwelling tide;

Whilſt her bright fancy, ſhining all the way,
Does like the ſun-beams on its ſurface play.
Her ſkilful hand guides the pure limpid ſtream:
Poliſh'd as *Butter*, ſoft as new-milk cream.

The ſame anſwered by Mrs. Jane Roberts,

[Formerly Miſs Jenny Pawley, her acquaintance with Mr. Ste. Roberts having produced this alteration in the lady's name; to whom we wiſh all joy and happineſs.]

Ye balmy zephyrs fan your gales,
Ye vernal ſhowers deſcend,
And with rich forage fill the vales,
Dear Bella to befriend:
Who, with ſcarce equal'd ſkill and care,
From ſuch pure ſweets derives
Freſh *Butter*, which, to pleaſe the fair,
Sh' in curious form contrives.

Mrs. Amelia Stanhope thus anſwers it, to Arabella.

Juſtly eſteem'd is Baker's noble ſtrain,
To teach us all unfading joys to gain;
But who thy *ſoft* and *melting* verſe can hear,
And not enraptur'd cry, With haſte prepare
Your choiceſt wreaths to deck the matchleſs fair?

The ſame by Miſs Diana Browne, of Honiton.

How I puzzled my poor brains
To find out your Ebor's plains!
At laſt old Yorkſhire ſhew'd its head,
And forth came *Butter*, cheeſe, and bread.

Philomathes thus anſwers it, to Arabella.

When Io by Jove to a heifer was turn'd, as poets of old do define,
If e'er ſhe was milk'd, and her milk was e'er churn'd, her *Butter* ne'er equalled thine.

The ſame anſwered by Kit Went.

Arabella's enigma's ſo wrapt in diſguiſe,
No wonder her *Butter* was ſtamped the prize.

Mr. William Francis, of Shinfield, thus anſwers it.

Your *Butter*, charming Arabell,
Does every other maid's excell.

The ſame anſwered by Mr. Wm. Gillmer, of Cheſterleſtreet.

In a plain pleaſant cottage contented I dwell,
With ſtore of good *Butter* and milk in my cell.
Yet ſomething I lack,—a briſk damſel to fellow,
In virtue and ſenſe, with the fair Arabella.

Mr. Fr. Smith thus anſwers it, from Judges, Ch. V. v. 25.

Hail chaſte Diaria, who ſurpaſſes far
My warmeſt and moſt ſanguine wiſh:
'We aſk for water but you give us milk,
And bring forth *Butter* in a lordly diſh.'

A variety of other ſeparate and ingenious anſwers were given by Meſſrs. Adoleſcens, T. B. B, T. Baker, T. Barras, J. Bayley, O. Beckett, J. Bricknell, J. Brown, Campanacei, Miſs Cannock, Cœlebs, Corydon, J. Crocker, R. Dening, Mrs. Dillotſon, T. Eland, Rev. J. Fiſher, T. Fox, J. Gruby, R. Hartley, J. Jackſon, G. Jefferſon, W. Laſhmar, Mrs. Blanch Lean, G. Little, Lobin Lout, J. Malham, T. Manifold, C. Metcalfe, Miſs Eliz. Oſborne, Philomath, R. Richardſon, J. Roberts, S. Roberts, R. Rogers, A. Rowe, J. Ruſher, I. Saul, J. Short, T. Towan, T. Truſwell, G. Turner, W. W, W. Wallace, J. Willes, T. Wilſon, and A. Y.

The Enigmas anſwered by Miſs Lugg.—To Dr. Conundrum.

Your epiſtle, good Dr. moſt R-apt'rouſly ſmart, 8
With attention I've read, nay, can ſay it by heart;
And freely acknowledge, ſo brilliant you ſhine,
I dread your wit more than you e'er can do mine:
Such notice I dar'd not from you to expect.——
But now 'tis my taſk to refuſe, or accept.——
The firſt is too raſh — and the latter's confeſt
Too pleaſing to me, to be wholly ſuppreſt.——
One oſtacle, tho', I muſt name t'ye, that ſits
Betwixt us — as often there does between wits;——
Love or poetry ſo your attention has claim'd,
That money you've either forgot, or not nam'd.
I'd honour your hand — ſo hope you'll declare,
Of wealth you've a *quantum ſufficit*, next year:
And ſay, ſince love's light as the fineſt of air,
How may we ſubſiſt when we're made a fond pair:
Tho' taſte, genius, learning, and judgment's your own,
The world, without gold, will your merits diſown;
Your friends ſcarcely PEEP, nay endeavour to ſhun ye, 2
Burleſque all your talents, unaided by money:
How SHEEPiſh muſt you and your deary appear, 3
You, no longer a wit — ſhe, no longer a fair.——
Yet think not, dear Dr. my mind I s ſo baſe, 4
T' bid Plutus give Cupid a ſlap on the face;
Much leſs think that my *ſummum bonum* is pelf;
Indeed no one values it leſs than my ſelf:
Yet how to aſſent to the terms, if you've none,
I'am much at a loſs to determine, I own:
Large *Numbers* of guineas I wiſh not to view, 11
But requiſite caſh to buy ſtocking and SHOE, 6
With WAFERS, ink, pens, good beef, bread, and BUTTER; 10, *Pr.*
This, with love, will compoſe all my heart's anxious flutter.
Perhaps I'm too *rapid* — The MUSHROOM fop, 5, 9
Who values himſelf for a BOW, cries pray ſtop; 7
Were I making love t'ye, for this I wou'd quit ye:
I ſpeak not to ſuch, but to one wiſe as witty.
And can you forget me? — I equally doubt ye,
As if you had ſaid — 'I cannot live without ye'.——
If you that *meridian* of indiff'rence can reach, 1
Senſibility rail at, dry philoſophy teach.

General Anſwer to the Enigmas by Dr. Conundrum.

Since Cupid thought fit to invade my poor breaſt,
Believe me, dear Giles, I've been almoſt poſſeſs'd:
At morn, NOON, and night, whether up or a bed, 1
Fair Peggy perpetually runs in my head.
Sure the Venus of Greece, who, as poets have ſhown,
To pleaſe a fond ſculptor, gave life to a ſtone;

Tho' thouſands of votaries BOW'd at her ſhrine 7
With prayers and I-ncenſe, was not more divine 4
Than the Venus of Britain, whoſe charms could impart
Such paſſionate warmth to my flinty old heart.
But my tranſport, dear Giles, I can ſcarcely expreſs,
To think that this goddeſs my arms will ſoon bleſs:
And ſince to your ſpouſe I, in ſome reſpect, owe
All the R-aptures I've known, and am likely to know, 8
I hope, when the wiſh'd-for event ſhall take place,
With your preſence you'll both the ſolemnity grace.
Methinks, my good friend, with ſo lovely a wife,
I could paſs in a cottage my remnant of life;
Where with health and content I might fix my retreat,
And leave my cloth SHOE and my crutch to the great. 6
Tho' at threeſcore and THREE, with my Peggy I'd riſe, 11
As ſoon as bright Phœbus ſhould PEEP from the ſkies; 2
To range o'er the meadows, to climb up the ſteep,
Or to reſt in the vale, and attend a few SHEEP. 3
Sometimes, as we'd ſit by the clear RIVER's ſide, 5
I would tune an old bag-pipe to pleaſe my ſweet bride:
Sometimes on her boſom would fondly recline,
Or preſs her as cloſe as a WAFER to mine; 10
While, with fingers of iv'ry, ſo white and ſo ſleek,
She would ſtroke my grey locks, or would pat my lank cheek.
But ah! ſhould the fair — which I ſcarcely expect;
For ſo ancient a Damon what nymph can reject? ——
Yet ſhould ſhe — forbid it, ye loves, and ye graces! ——
My overtures ſlight, and refuſe my embraces;
My joys, like the MUSHROOM, muſt ſoon paſs away, 9
And my hopes melt like BUTTER before the ſun's ray. *Pr.*

The Rev. Mr. Thomas Baker thus anſwers them.

'From the rough manger to the judgment throne, [roll'd on.'
I've ſung the Saviour as the years
The bliſsful manſions of eternal day,
The muſe, laſt year, attempted to diſplay.
Now, in idea, offers to your ſight,
The deep, dark dungeons of eternal night. [ſhall be,
Scripture her pure unerring guide
To ſing the dread abodes of miſery.
As to the place, 'Tis horrid darkneſs all!
Prepar'd for rebel-angels at their fall;
Not one *meridian* ray will ever *peep*
Thro' that ſad gloom; nor can the pris'ners ſleep. [nels ſwell,
As *tides* of joy in heaven's pure chan-
So lakes of flame o'erflow the caves of hell; [ſmoke ariſe;
Dark, dreadful clouds of ſulph'rous
And there's the tort'ring worm that never dies, [dain'd to *bow*
There the proud hoſts that once diſ-
To the meek lamb, endure eternal woe; [horror lie,
And wicked men o'erwhelm'd with
Weary of life, and yet can never die;
Seal'd in thoſe gloomy cells with diſmal chains, [of pains.
'Midſt worſt of company, and worſt
The *Shoe*leſs, cloven-footed fiend is there, [deſpair;
King of thoſe brimſtone regions of
The *Muſhroom*-glutton (whoſe enticing words [ſwords;)
Once ſoft as *Butter*, now are very

Howls with the wretched goats in doleful voice, [ſtrains rejoice.—
While the bleſt *Sheep* in heav'nly
Ladies, wou'd you eſcape theſe ſcenes of woe,
And, after death, to bliſsful manſions go:
Repent, believe in God, obey his word, [our Lord.
And you'll be bleſt thro' Jeſus Chriſt

The ſame anſwered by Mrs. Lacey.

Methinks in proſpect from afar,
I view the diſmal ſcene of war,
Hear the loud cannon's dreadful roar,
See fields and *Rivers* ſtain'd with gore,
Behold the peaſant's dread diſmay,
See all his ſubſtance fall a prey;
His *Sheep*, his oxen, and his kine,
His *Butter*, honey, oil, and wine;
How ſad the change! alas how ſoon,
Blaſted his morning hopes e'er *Noon*.
Theſe are thy works perfidious France;
And dare thy *Muſhroom* ſons advance,
Or *peep* into thoſe happy plains,
Where George the Third and freedom reigns.
Where is our boaſted courage fled?
Are all our noble heroes dead?
Rouſe Britiſh tars! o rouſe once more,
Loud thunders *Three*fold on them pour;
Confine them to their wooden *Shoes*;
Their ſoups, their *Wafers*, and ragouts;
There let them *bow* beneath the yoke,
Nor more the lion dare provoke.

Mr. Robert Richardſon thus anſwers the ſame.

On the Death of a young Lady at the Age of 18.

And ſhall Ophelia, ſoft engaging fair!
In beauty's bloom reſign her tuneful breath, [taſk,
And ev'ry mournful muſe refuſe the
To ſpeak her virtues to a wondring world? [abodes,
Forbid it, Gods! from whoſe divine
She now perhaps with kind compaſſion views [tears!—
Our unavailing griefs! our fruitleſs
Tho' far unequal to the painful taſk,
Permit a tender, fond, deploring muſe,
'Who lov'd thee, living; and regrets thee, dead'; [leſs praiſe.
Dear, hapleſs maid! to ſing thy match-
But how ſhall *I* declare each nameleſs grace, [teous form?
That guiltleſs wanton'd in thy beau-
How paint the roſeate bloom that o'er thy cheek [at morn,
'Its *ſoft* effulgence' ſpread? As when,
Aurora's bluſh, *peeps* o'er the eaſtern hills: [eyes,
Or how the radiance of thoſe lovely
As ſol's *meridian* blaze, divinely bright?
Dear emblem, thou, of ſpotleſs *innocence!*
In whoſe fair boſom, wiſdom, virtue, truth,
With rival-radiance glow'd.—As to the blaſt [baneful eaſt,
That wafts its influence from the
The *tender bud* untimely falls a prey;
Thus ſoft Ophelia, dear enchanting
Regain'd her kindred ſkies.— [maid!
Where now thoſe crouds of fond adoring ſwains [ſhrine.
That paid their glad *devoirs* at beauty's
Ye nymphs and ſwains that *trip* the flow'ry lawn, [the day,
Whether in ſportive dance ye ſpend
'Or tune the reed to love', your joys ſuſpend, [*ſeal'd* her doom.
And mourn the hapleſs hour that
And thou, lov'd *ſtream!* by whoſe delightful banks [ſweets,
The gentle zephyrs ſhed their choiceſt
To bleſs the fair Ophelia's early days,
In plaintive murmurs join the ſcene of woe. [riſing ſuns
Farewell! ſweet ſaint! conſtant as
Shall light the earth, or ev'ning dews deſcend, [lia's urn'.
'Shall Strephon's tear bedew Ophe-

The ſame anſwered by Mrs. Blanch Lean.

Gay faſhion's votaries believe
All happineſs that heav'n can give,
Conſiſts in outward ſhow;
Themſelves ſuperior to advance,
To dreſs with art, to talk, to dance,
And make the graceful *Bow*.
The beau his pocket glaſs muſt keep,
Thro' which he often takes a *peep*,
For fear there's ought amiſs;
Then views himſelf with partial eyes,
And inwardly exulting cries
What form can equal this.
The Belle, when dreſt with niceſt care,
With feathers, ribbands, gauze, and hair,
Her head ſo large doth ſwell
That beehives when compar'd are ſmall;
But then her *Shoes*, ſo neat withall,
An inch will round the heel.
Thus in the vain parade of dreſs,
They graſp illuſive happineſs,
Which ſtill deceives their ſight;
Their brighteſt proſpects wear a gloom,
Their joys ſhort-liv'd as *Muſhroom*,
And as a *Wafer* light.
I envy not their dreſs or wealth,
Give me, kind heav'n, content and health,
While on life's *Stream* I glide;
Or if ſweet health I ſtill ſhould want,
Yet, O! propitious, to me grant
Content, to heav'n ally'd.
Supremely bleſt poſſeſt of thee,
Should ſore diſeaſe, or poverty,
Within my walls appear;
Patient in pain, I'd ne'er regret,
My cruſt un*butter*'d grateful eat,
Nor ſigh for better fare.
Devotion pure and from the heart,
Great *tri*une God to me impart,
Oh! make and keep me pure;
Teach me thy holy laws to learn,
The good from evil to diſcern,
And to the end endure.
Then if at *Noon* I yield to fate,
Or lengthen'd to life's longeſt date,
My fleeting moments fly;
Chearful I'll view approaching death,
Without a ſigh reſign my breath,
Content to live or die.

Mr. French Johnſon thus anſwers them.

I ſing the ſwain, ſo briſk and gay,
Who tends his *flock* at *peep* of day,
With tawney hat and ſtubborn *ſhoe*,
Inelegant for courtly *bow*.——
The debauchee, not quite ſo ſoon,
Ope's his drowſy eyes at *noon*;
Nay two or *three*, or ſometimes four,
Has been the liſtleſs riſing hour.—
Let noiſy pleaſures now give room
To peaceful walks in vernal bloom,
Where ſwelling *riv'lets* preſs along;
In ev'ry grove and buſh a ſong;
In champaign fields where *muſhrooms* ſpring,
In ſtragling track, or fairy ring;
Where nature's works in beauty ſhine,
Impres'd with *ſeal* or ſtamp divine.
The milkmaid, vying with the roſe,
Receives the tribute of her cows;
Gives love and labour each a ſhare,
The dairy her peculiar care:
Her falling curd with pleaſure ſees,
To form the ſage, or netted cheeſe;
And *butter*, veil'd in myſtic guiſe,
Fair Arabella, is the prize.

Collin's Complaint, by Mr. Iſaac Saul.

Farewell, ye hills and flow'ry plains,
Ye ſprightly nymphs and chearful ſwains;
Farewell my *ſheep*, my dog and crook,
In which *I* ſo much pleaſure took;
Farewell my cows, in number *three*,
That milk and *butter* gave to me;
Farewell my cot, my orchard too,
Where rip'ning fruit the branches *bow*;
Farewell thou ſweetly bubbling *ſtream*,
Cool ſhaded from the *noon* tide beam;

Farewell thou fertile dazied mead,
Where I was wont my flocks to feed;
Where *muſhrooms, peep*ing from the
ground,
In plenty often may be found;
Where oft the milk-maid comes in
view,
Soft *tripping* thro' the pearly dew;
Where oft I've met my fair, whoſe
ſmile
Cou'd ev'ry anxious care beguile;
With her cou'd only pleaſure know,
The *ſeal* of all my bliſs below:
Farewell to all that I did love,
For Delia does unconſtant prove.

Mr. Robert Hartley, of Dareſbury, thus anſwers them.

Dear ladies, you're witty,
I doubt not you're pretty,
And if you attention will give,
I'll to you declare,
Th' enigmas laſt year.
The firſt? — It is *noon* as I live;
The ſecond's a *peep*,
The third is a *ſheep*,
The fourth's not U, but 'tis *I*;
The fifth is a *river*,
The ſixth *ſhoes* of leather.
The ſeventh?—A *bow* you may try;
The eighth's R in broom,
The ninth a *muſhroom*,
The tenth is a *wafer* I'm clear.
The eleventh?—Let me ſee,
I think it is *three*,
And *butter*'s the prize in the rear.

The ſame by Mr. T. Woolſton of Sulgrave.

1. E'er Phœbus o'er the hills begins
to *peep*, [ling fields,
I take my *ſhoes*, and thro' the ſmi
Purſue my way midſt flocks of harm-
leſs *ſheep*, [ture yields
To taſte the ſweet delights kind na-
2. Here herds of kine, replete with
milky ſtore, [plains,
At pleaſure range the far-extended
Where *muſhrooms* oft the ſearching
ſwain explores, [gentle rains.
When earth receives the ſummer's
3. At noon beneath thoſe ſpreading
alder's ſhade, [grow,
That on yon *river*'s flow'ry margin
With Mantua's bard at eaſe I oft am
laid, [ters flow.
Whilſt at my feet the peaceful wa-
4. When ſober ev'ning comes to cloſe
the day, [of things,
And *ſeals* with darkſome veil the face
Serene in contemplation then I ſtray,
While youthful fancy ſpreads her de
vious wings. [her daring flight,
5. Sometimes full-plum'd ſhe takes
Thro' pathleſs regions ſoaring un-
confin'd,
To radiant ſpheres beyond the reach
of ſight,
And fearleſs leaves far-diſtant worlds
behind. [the ſky,
6. With quick tranſition ſtooping from
On eaſy pinions ſkims the rolling
main, [ſarts lie,
To lands remote where trackleſs de-
And ſcorching ſuns parch up the
duſty plain. [chryſtal ſtreams,
7. But chief thoſe peaceful ſcenes by
In flow'ry mead her wandring flight
explores, [milder beams,
Where ſuns unclouded ſhine with
And ſpring eternal reigns on golden
ſhores. [fairy land,
8. There o'er enchanting fields of
Midſt amaranthine ſweets and bloom-
ing groves, [hand,
Led by the gentle muſe's magic
She ſports with graces and the little
loves. [my days,
9. *Three*-fold more happy thus I ſpend
In pleaſing ſolitude's ſecure retreat,
Than if I followed maſquerades and
plays, [the great.
Or cring'd and *bow*'d at levies of

Deſcription of a Beau by Marcus.

Dear ladies wou'd you wiſh to know,
That dull, inſipid thing, a beau,
Attend and learn to ſhun him ;
And ſince a riddle he's confeſt,
Here view him in th' enigmas dreſt,
You'll own I've juſtice done him.
As *ſheep* both ſing. and plur. can take,
So may the beau claim hic & hec,
As one of doubtful breed.
And *noon* and *peep* his lore diſplay,
'Cauſe backward, forward,—any way,
Like them, he's known to read.
As he has got more tongue than brains,
His mouth more than his head contains ;
Reſembling much a *ſtream :*
And, in his *wafer* garments dreſt,
Like new-churn'd *butter*, to the taſte
H'll ſoon inſipid ſeem.
Extremely like the letter R,
He's dangling ſtill behind the fair ;
And oft in mirror view'd :
Set in deriſion like an *I :*
And with a faſhionable lie,
Sometimes he dare intrude.
Poſſeſt of ev'ry ſeeming grace,
His wit, his ſhape, his hair, his face,
Are falſe as courtiers *bows* :
Yet none diſpute that they're his own;
He bought 'em,—to put off or on,
Juſt like a pair of *ſhoes*.
Muſhrooms with beaus may well compare,
For both unheeded upſtarts are,
In nature's gen'ral plan ;
What one of thoſe is to a tree,
Or as is *three* to three times three,
A beau is to a man.

Mr. John Batkin anſwers them thus ;

In towns let buſy mortals dwell ;
Give me, ye Gods ! ſome rural cell,
In ſylvan ſhades ſecure to lie,
When ſultry *noon* inflames the ſky.
Soon as the morn begins to *peep*,
And piping ſwain leads out his *ſheep*,
Let cits their ſloth indulge, while *I*
Along the *river*'s margin hie ;
But wary ſhun the noiſome ground,
Where in the mud my *ſhoe*'s embrown'd,
And ruſtling reeds in crowded rows,
Bow to each gentle air that blows.
When night her ſable mantle ſpreads,
And *muſhr'ms* iſſue from their beds,
Home let me haſte and verſe indite,
Or to ſome friend far diſtant write ;
Safe in its *ſeal* the billet flies,
Impervious to intruding eyes.
Or company perhaps invites,
To ſocial mirth's ſupreme delights ;
Not more than ſeven, nor leſs than *three*,
Horace, thy rule will do for me :
Till ſleep advance and end my joys,
Sleep that noiſy cities flies.
And riſe when morn begins to ſhine,
Or cleanly damſels *milk* their kine.
Such ſolace if the country give,
Far—far from cities let me live.

Various other ingenious anſwers were given by Meſſrs. Agricola, E. Ambroſe, Ancient Britain, J. Averroes, J. Bayley, O. Becket, C. Bowler, Miſs *Di. Browne, Calophilus, Collienſis, Damon, R. Dening,* Mrs. *Dillotſon, Dolly, R. Dutton, J. Eadon, T. Elana, W. Exall, Rev. Joſ. Fiſher, T. Fox, W. Gilmer, J. Hall, G. Harris, J. L. Hicks, E. J. J. Jackſon, F. James, G. Jefferſon, J. Johnſon, W. King, W. Laſhmar, G. Little, Rev. J Malham, J. Matthews, R. Nelſon, Philarithmus, Philomathes,* Mrs. *J. Roberts, S. Roberts, R. Rogers, J. Ruſher, Ruſticus, R. S.* Miſs *Peggy Scott, G. Simpkin.* Mrs. *Amelia Stanhope,* Mrs. *Eleaner Suggett, J. Swallow, G. Stevenſon, A. Temple, Terræ-filius, T. Towan, T. Truſwell, W. W, W. Watkins, Kit Went, T. Wilde, J. Willes, R. Willett, J. Williams, and T. Wilſon.*

ANSWERS to the QUERIES, REBUSES, &c.

I. Query anſwered by Mr. John Jackſon.

Late of Brompton, now Teacher of Grammatical Literature and Mathematics in North-Allerton.

The word Dulcarnon is from the Arabic, and ſignifies to be put to one's wit's-end; whence Pythagoras gave the appellation of Dulcarnon to 47, 1. of Euclid, which after long ſtudy he found out, and ſacrificed an ox (or according to ſome a whole hecatomb of oxen) to the gods, in gratitude for ſo divine an inſpiration — Moſtly according to the ſame opinion is the anſwer given by Meſſrs. *Calophilus*, *Rev. Joſ. Fiſher*, *Jefferſon*, *Philarithmus*, *Rowe*, and *Smith*; ſome of whom quote an expreſſion in Chaucer, where the word is uſed in much the ſame ſenſe, and in the gloſſary, at the end of his works, is this remark: ' Dulcarnon is a propoſition in Euclid, lib. 1. prop. 47, which was found out by Pythagoras after an whole year's ſtudy, and much beating of his brain: in thankfulneſs whereof he ſacrificed an ox to the gods; which ſacrifice he called Duncarnon. *Alexander Necham*, an ancient writer, in his book *De Naturis Rerum*, compoundeth this word of Dulia and Caro, and will have Dulcarnon to be quaſi ſacrificium carnis. Chaucer aptly applyeth it to Creſeide in this place; ſhewing that ſhe was as much amazed how to anſwer Troilus, as Pythagoras was wearied to bring his deſire to effect'.

II. Query anſ. by the Rev. Joſ. Fiſher, Vicar of Drax, Yorkſh.

I am inclined to believe this to be a vulgar error. If it be founded in truth, it may be owing to a very quick exhalation of the waters, by which means the circumambient air being quickly ſaturated, will very ſoon precipitate its contents again, and thereby cauſe another flood. — The ſolution by Mr. *Alex. Rowe* is much the ſame.

Mr. *Geo. Jefferſon* ſays, The rain which is pent up in ſmall clouds, falls haſtily, and ſo cauſes ſmall rivers to overflow, but which will as quickly run off without a continuance of the rain. When this is the caſe, it often happens that a number of thoſe ſudden rains ſucceed one another, cauſing ſeparate floods; as it often falls out about the vernal and autumnal equinoxes.—In the ſame manner is the anſwer by Mr. *J. Jackſon.*— It was alſo anſwered by *Damon*, *Marcus* and *Philarithmus.*

III. Query anſwered by Philarithmus.

Herodotus in Clio relates, that the Lydians, in the time of king Atys, oppreſſed with a general ſcarcity, to lighten their afflictions, and forget hunger, had recourſe to divers inventions, and among other ſports found that of Dice (κυβων). Some aſcribe this invention to Palamedes, during the leiſure in the camp of the Greeks when againſt Troy: but Homer makes no mention of it. This game was prohibited by the Roman laws, as appears from many authors, except during the Saturnalia, under the name of Alea. Hence Cicero ſays in Phil. II. that Denticula, the playmate of Marcus Antonius, was condemned concerning the Alea. And

Suetonius writes, that Nero in an inſtant ventured at 400 HS. Many of the Roman ſatyriſts have beſtowed ſome of the worſt epithets on this play, becauſe of its dangerous tendency, from people of all ranks being too much devoted to it, and venturing too high at it. The Britiſh annals furniſh an account of a remarkable play at Dice and Hazard between the king of Cyprus and Henry Picard, mayor of London, at the noble entertainment given by him to the kings of England, France, Scotland, and Cyprus, the prince of Wales, nobility, &c.—This query was alſo anſwered by Meſſrs. *Jackſon*, *Jefferſon*, and *Marcus*; who ſpeak of Aurengzebe as the inventor.

IV. Query anſwered by the Rev. Mr. Fiſher.

I take the reaſon to be this, that by the pin being ſtuck in below, thro' the wick, the molten greaſe will follow down the wick, and carry the thief along with it to the wick.—*Marcus* ſays, I have often tried the experiment of the thief, but could never find it have the effect mentioned. — Anſwers were alſo given by Meſſrs. *Jackſon*, *Jefferſon*, *Philarithmus*, and *Rowe*.

V. Query anſwered by Marcus.

From the manner in which the Count de B. apprehended Mr. Yorrick's name and profeſſion, in the affair of the paſſport, and the conſequent confuſion it occaſioned in him, I think he muſt mean that the French are too ſerious upon trifling occaſions, and what he means as jeſt was taken in earneſt.—Anſwers were alſo given by Meſſrs. *Jackſon*, *Jefferſon*, *Philarithmus*, and *Rowe*.

The Rebuſes anſwered by Mrs. Roberts.

Or to *Sulgrave* or *Bath* altho' *Hunt* may rove, 5, 3, 4
To ſearch for the maid to his mind;
Yet *Conundrum* affirms, 'In Penryn's alcove, 1
He'll the *Mirror* of excellence find.' 2

Rebuſes and Paradox anſwered by Mr. John Ruſher.

Friend *Hunt* will you pleaſe to accept of a *Glaſs*? 4, 2
Drink healths to *Conundrum* and Peggy his laſs, *Par.* 1
Whom, at *Bath* or at *Sulgrave*, there's none can ſurpaſs. 3, 5

Mr. William Jones, of Hayford, anſwers them thus.

At *Bath* or at *Sulgrave* I'd gladly attend,
With *Hunt* or *Conundrum* an ev'ning to ſpend;
Their wit and good humour would greatly ſurpaſs,
All the charms *I* ſhould find in the bottle and glaſs.

The ſame anſwered by Miſs Nancy ——.

J. Hunt and the *Doctor* at *Bath* may have been,
But Woolſton's fair town I've never yet ſeen,
Except it be *Sulgrave*; this a maid does declare,
Who needs not a *Glaſs* to know ſhe is fair.

Mr. William Laſhmar thus anſwers them.

The ladies of *Bath* and of *Sulgrave* admire,
Their form in the *Glaſs*, with hopes to inſpire:
But the charms of the fair are virtue and ſenſe,
Whoſe value alone for all others compenſe.
Tho' Doctor *Conundrum* be ſixty and three,
He heaves a ſoft ſigh fair Peggy for thee;
But ſure the old ſage had better reflect,
And leave off the *Hunt*, leaſt he meet with neglect.

Mr. J. Bayley, of Middleton, thus anſwers.

Learn'd Doctor *Conundrum*, very few can ſurpaſs,
Miſs Peggy neglects her fair toilet and *Glaſs*,
To employ her beſt time in adorning her mind;
No lady of *Sulgrave* or *Bath*'s more refin'd.
In whiſpers friend *Hunt* has addreſt the ſweet fair;
From this hint of your rival, good Doctor, beware.

Various other ingenious anſwers were given by Meſſrs. *Baker*, *Barras*, *Batkin*, *Damon*, *Dutton*, *Fox*, *Gruby*, *Harris*, *Hartley*, *Hicks*, *Jackſon*, *Jefferſon*, *Little*, *Malham*, *Manifold*, *Marcus*, *Philarithmus*, *Richardſon*, *Roberts*, *Rogers*, *Rowe*, *Saul*, *Simpkin*, *Smith*, *Terræfilius*, *Truſwell*, *Wallace*, *Wilde*, *Willes*, *Willet*, *Wilſon*, and *Woolſton*.

The Arith. Paradox anſwered by Mr. John Willes, of Marſk.

Ali's ſentence was juſt. For ſuppoſe the loaves to be divided each into 3 equal parts, making 24 parts in all the 8 loaves, and each perſon to eat an equal ſhare, or 8 parts. Therefore the ſtranger had 7 parts of the perſon who contributed 5 loaves, or 15 parts, and only 1 part of him who contributed only 3 loaves, which make 9 parts.

The ſame by Mr. Alexander Rowe.

As 8 loaves : 24 pieces of money :: 5 loaves : 15 pieces, and ſo is 3 loaves to 9 pieces. Hence $15 - 8 = 7$ the pieces of money for the owner of the 5 loaves; and $9 - 8 = 1$ piece of money for the owner of the 3 loaves.

The ſame by Mr. John Jackſon, of North Allerton.

The 8 loaves divided into 3 equal ſhares, give $2\frac{2}{3}$ loaves for each; conſequently the ſtranger could only eat $\frac{1}{3}$ of a loaf belonging to him who had 3, whereas he eat $2\frac{1}{3}$ loaves belonging to the other, who had 5; and $2\frac{1}{3}$ is juſt 7 times $\frac{1}{3}$, and therefore the one muſt have 7 times as many pieces as the other.

And according to the one or other of theſe methods the anſwer was given by Meſſrs. *T. Abrey*, *T. Baker*, *W. Cole*, *C. Derrick*, *R. Dutton*, *J. Fiſher*, *R. Hartley*, *G. Jefferſon*, *J. Malham*, *T. Manifold*, *Philarithmus*, *T. Robinſon*, *J. Saul*, *F. Smith*, *A. Temple*, *J. Williams*, and *T. Wilſon*.

NEW ENIGMAS.

I. Enigma 602, by Mrs. Blanch Lean.

Ladies pleaſe to take——
Three letters from the alphabet,
With them you may compoſe my name:
Tho' ſtrange it ſeemeth, ladies, yet
Direct, reverſe, 'tis ſtill the ſame.
When to each other you do uſe
My name, it then does honour mean;
But ſignifies contempt, abuſe,
When ſpoken to a filthy quean.

II. Enigma 603, by Marcus.

All nature and art I defy,
To ſhew ſuch a bold rogue as I;
So harden'd and odd is my nature,
That often I hiſs at my maker;
Yet none ſuffers ſo many knocks,
Nor ſit half ſo long in the ſtocks.
In ſcripture, and read me aright,
I enter'd a temple by night;
There ſtruck the poor owner ſtone dead,
Tho' I got myſelf knock'd on the head:
Yet again in the year thirty-three,
I faſten'd your friend to a tree.
But ſure I am driving too far,
My name will too plainly appear;
Nay, long before now, ſubtle friends,
You've got me at your fingers ends.

III. Enigma 604, by Mr. Richard Willett.

I come, I come, pray ladies give me room,
Tho' not in paſte, or powder, or perfume;
But why ſuch ſmiles? let your deriſion ceaſe,
For I'm the grannam of the human race.
It is of me the valiant bear a dread,
When in the field 'midſt heaps of ſoldiers dead:
Why not? I'm more expreſſive than the tongue,
Wiſer than wiſdom, and than ſtrength more ſtrong.
I am the product of a fruitleſs noiſe,
On me ſwift fame oft ſcales the azure ſkies:
I'm what the poet wills not to rehearſe,
Tho' I'm the fount whence oft he draws his verſe.
I'm what the blind all ſee, the dumb all ſing;
In ſhort, I'm the reverſe of ev'rything.

IV. Enigma 605, by Mr. William Wells.

Know, ladies, we're a num'rous, mighty train,
And date our birth before old Adam's reign;
And when he liv'd we his attendants were,
As will hereafter more at large appear.
To count the number which we to are grown,
Would paſs the ſkill of any artiſt known:
For we indeed exceed the number far
Of all the forces of the ſons of war.
A hoſt ſo mighty what can e'er diſmay?
By one of us ſome hundreds fell one day:
Be watchful then, and guard againſt alarms,
For ſome of us are always up in arms;
March forth with heroes, with them take the field,
Nor dread the force that e'er can make us yield.

And ſhould we ſuffer by a ſcene of woe,
For th' leaſt of us you'll into mourning go;
Mourning that's real, for you'll ne'er take reſt,
Till we are righted, and our wrongs redreſt.
Another hint — oft we've roſe from the grave,
Both quick and dead! no more you need to crave.

V. Enigma 606, by Mr. J. Johnſon.

Survey me, ladies, every way,
Nay, touch me too, and then you'll ſay.
I'm ſoft, I'm pleaſing; in my nature,
Seem as if I'd hurt no creature;
And yet by ſome 'tis underſtood,
My food is human fleſh and blood;
That, like the crocodile, my maw
To ſtuff, is op'd my upper jaw,
Nay more, my mouth's ſo very wide,
It ſtretches quite from ſide to ſide;
Of my broad head, which when ye view,
You'll almoſt think the ſtory true.
To keep me long, ſome ill portends,
Even to thoſe who are my friends,
Now, ladies, ſhou'd you be in doubt,
Which way to find your ſervant out,
The author, as I underſtand,
Will kindly take you by the hand,
And ſafe convey you to my door,
Shou'd you approve it — ſomething more.

VI. Enigma 607, by Miſs Polly Oliver, of Beamiſter.

Let Bentley, Taſſo, Conundrum,
Let Lacey and his conſort come;
Miſs Lugg and Ormiſhaw of fame,
With Mrs. Lean tell my name:
For, N. B. I with thoſe
Oft croſs the plains when they compoſe;
Beneath a thouſand glide along,
And ſeldom touch th' aſſembled throng;
When join'd to thoſe a thouſand more,
You then will find me under four;
The length of 8 feet paſs the plain,
Then turn and ſkim it o'er again.
Sometimes diſtinguiſh'd I am found,
With girdle my ſlim waiſt around;
This truth you'll ſee full plain enough,
In yonder coxcomb taking ſnuff;
The girdle from me, now his pride,
Perhaps tomorrow's forc'd aſide;
For ſomething to him of more uſe.
I'm leaſt of all my father's houſe;
But not too little, o ye wiſe,
T'eſcape your quick diſcerning eyes.

VII. Enigma 608, by Mr. French Johnſon.

When great Jehovah did to order call
The jarring maſs, and pois'd the mighty ball,
Foremoſt I rank'd amidſt created life,
Attended Adam, waited on his wife;
With them was driven from that bleſt abode,
The guard of angels and the walk of God.——
When Noah enter'd the capacious ark,
I was the firſt and laſt that did embark.——
In ev'ry empire, kingdom, ſtate the ſame,
With man and beaſt precedency I claim.
At fam'd Newmarket, there I lead the worſt,
Meet me at York, am foremoſt of the firſt.

Traverſing towns, thro' ev'ry lane and ſtreet,
Reſtleſs I rove, but if by chance I meet
Damon's impreſſion, tho' he's far from view,
Single his walk, and in his path purſue. ——
With reſolution boldly I advance
To meet the bayonet or pointed lance.
Fronting the foe, and daring in the fight,
Yet ſhew my back, and foremoſt in the flight.——
When ſmiling Flora all her charms diſcloſe
In vi'let, woodbine, jeſſamine, or roſe;
Or other ſweets which pleaſure ſo create,
The ſpicy gales of Banda or Ternate;
Nay, were the odours all compris'd in one,
They're made for me, and almoſt me alone.
My food ſubſtantial, at the court behold,
Lodg'd in a cheſt of brilliants ſet in gold;
Sometimes in baſeſt metal, ruſty, plain,
Attend the pedlar and the gipſey train.——
By force to ſeize me is a rude aſſault,
When any dare commit ſo great a fault.——
That amorous poet, of immortal fame,
My greatneſs knew, and thence receiv'd a name.

VIII. Enigma 609, by Mr. Giles Lacey.

I am, fair ladies, — let me ſee——
I am a flower, a ſhrub, a tree;
A bird, a beaſt, a man, a woman—
Is this relation ſtrange, *uncommon?*
More *proper* then, I'm London, Cheſter;
Your brother Richard, Ann your ſiſter.
All this is *ſingular* I own,
But am I ſingular alone?
So or not ſo, I claim you'll ſee
The attribute *plurality*.

IX. Enigma 610, by Mr. T. Woolſton.

From brazen fields of war ye fair I come
To ſeek admittance; lo! a ſtranger claims
Your kind attention, whilſt the various turns
Of fortune I relate —— how I have ſeen
Whole cities ſack'd, have help'd the warrior on
Thro' fields of death to ſave the hapleſs fair:
And, oh! for one diſtreſs'd who would not ruſh
In generous pity thro' a hoſt of foes.——
In earth's dark boſom hid from ſight of day
Whole years I lay unthought of and unknown,
Till delving mortals brought me forth to light,
To ſuffer woes words are too faint to tell.———
By man relentleſs, to Etnean fires
I firſt am doom'd to ſuffer heat intenſe,
Then dragg'd from thence, ſoon plung'd in Stygian lakes,
As tho', alas! my tortures knew no end;
Yet hence again to *ſharper* trials borne,

At length to full maturity arriv'd,
Equipp'd with all the gallantry of war,
I ſally forth to blood and ruthleſs deeds.
Tho' not on blood and ſlaughter always bent,
Harmleſs and inoffenſive while at reſt,
But if I'm urg'd by avarice or hate,
I ſhed pale horror o'er extenſive realms,
And devaſtation reigns where'er I'm ſeen. ———
To draw his foll'wers on thro' fields of blood,
And gain himſelf a name, Mahomet feign'd
Elyſian plains lay ſtretch'd beneath my blaze. ——
My flaming glory fallen Adam ſaw;
With angels too 'tis ſaid I have been ſeen;
And kings and heroes own me for their guard.

X. Enigma 611, by Mr. Thomas Cowen.

Tho' hard my fate I once knew happier times,
In fairer regions and in milder climes;
Near where the fabled fauns and ſatyrs rove,
Where all was ſofteſt pleaſure, peace, and love;
Vouchſaf'd my ſervice to the ruſtic throng,
Their pleaſure heighten'd, harmoniz'd the ſong;
My friendſhip deign'd to all the neighb'ring plain,
And flocks and herds ſeem'd happy in my reign;
My kindneſs felt when rolling tempeſts hurl'd
Their bitt'reſt fury o'er a weeping world;
Or when the ſun diffus'd his warmer ray,
And pour'd on all the fervent flood of day.
But now my woes commence, ſad ſcene of grief!
And now behold me lab'ring paſt relief;
Behold my quiv'ring members beat the ground,
And hear my dying murmurs all around.
Next chang'd my name, my ſhape rotund before,
Will now aſſume the pleaſing form no more.
Oblong my form, tho' curv'd my top has been,
Array'd in white, brown, blue, but ſeldom green.
And tho' when living ne'er had ſight allow'd,
Have ſometimes eyes as 'twere to view the crowd.
Nor ends my ſhame tho' dead, in irons hung,
Expos'd to th' inſults of the giddy throng;
And well remember at the midnight hour,
As Jack paſt by me with a hideous roar.
Scarce could he hold direct his tott'ring pace,
Tho' with foul dirt beſpatter'd all my face.
Your favours, O ye fair, I ſometimes gain,
Which more than recompence whole years of pain;
Ye deign me oft the balm, the pleaſing bliſs;
If not your lips, your hands or robe to kiſs:
I fly to pleaſe you, ſtand to guard your charms,
And oh! how ſafe you reſt within my arms.

XI. Prize Enigma 612, by Taſſo.

In early life I dwelt where Ceres reigns,
'Mongſt the rude tenants of Britannia's plains;

Where rural muſic warbled thro' the ſhade,
And nymphs and ſwains their ev'ning gambols play'd;
Where peace ſerene, and laughter ever gay,
Bleſt both the coming and the parting day.
Oft near yon ſtream that murmurs thro' the grove,
Have I been witneſs to Philemon's love. ———
Too ſoon I part, for ever far remov'd,
From theſe, from parents, and from friends belov'd:
Deſtin'd to quit theſe regions of delight,
And hail the manſions of eternal night.
Yet why complain I? ſince by death I've gain'd
Honours which living I had ne'er obtain'd. ———
In days of yore when heav'n, to bleſs the land,
Gave Britain's ſcepter to a woman's hand;
When arts and arms adorn'd th' hiſtoric page,
And ſtretch'd her triumphs down to ev'ry age;
At court my levee was each morning grac'd,
With lords and ladies of politeſt taſte.
Such then the *ton* —— but (ah! beware ye great,
Nor truſt to fortune, for ſhe ſmiles deceit:)
To blaſt my hopes, far hence in ſearch of fame
From eaſtern climes, a ſwarthy ſtranger came.
With what ſucceſs to gain my place he ſtrove,
Too well I know, and reigns ſucceeding prove.
Soon as his preſence had obtain'd acceſs,
My friends grew fewer, and my levee leſs;
Till by your int'reſt he confirm'd his power,
And I was order'd to appear no more.
Ah! turn not thus thoſe ſcornful eyes away,
Nor truſt, ye fair, this fav'rite of the day;
His gay retinue may attract your ſight,
His fragrance pleaſe you, or his tales delight;
Yet know, detraction, pale diſeaſe, and pain,
Oft crowd his levee and compoſe his train. ———
Ingrates begone! — I pine not with deſpair;
Some friends remain, tho' few: — but thoſe ſincere;
To bring them health, I've brav'd the torrid zone,
And paſt a gulph, to Cook himſelf unknown. ———
Are theſe ungrateful? Go were fancy reigns,
And mimic madneſs ſhakes her rattling chains;
Where Garrick's art hath forc'd a ſmile from woe,
And bade e'en manly tears with grace to flow;
There view how oft to gain the foremoſt place,
Forth ſteps a ſon of ſoft Italia's race:
In vain th' attempt, in vain each ſoothing charm,
My friends on high, indignant catch th' alarm,
With power omnipotent protect the cauſe,
Claim my precedence, and enforce their laws.

NEW QUERIES and REBUSES.

I. Query by Mr. Ra. Dutton.

Since clouds are allow'd to conſiſt chiefly of water, how are they ſuſpended in the air, a medium ſo much lighter ſpecifically than water.

II. Query by W. M.

Having often experienced that the great end of a new-laid egg, when applied to the tongue, emits a conſiderable warmth, while the other end feels quite cold; I would gladly know the reaſon of it. Alſo, why that warmth decreaſes as the egg grows ſtale?

III. Query by Mr. J. Johnſon.

Why is it, ſetting aſide cuſtom, more judicious to cultivate a greater power of action in the right hand, than to give ſuch preference to the left; and why do children, while young, uſe the left more than the right?

IV. Query by Mr. John Jackſon of North-Allerton.

In Dr. Prieſtley's hiſtory of the preſent ſtate of diſcoveries relating to viſion, light, and colours, he mentions ſome very ſenſible perſons who have to appearance very fine eyes, and can ſee to read very ſmall print, but yet cannot make any true diſtinction of colours. In what manner is this to be accounted for.

V. Query by Mr. John Bayley of Middleton.

Ye learned pray ſay, (who dark miſt'ries unfold)
Why razors cut better with hot water than cold.

I. Rebus by Dr. Conundrum.

From fire, and water, air, and earth,
Four jarring terms derive their birth;
Th' initials join'd a name declare,
That ſmooths the wrinkled brow of care.

II. Rebus by Mr. J. Goodaker.

With a ſign of the zodiac, pray ſtrive to find
An ancient cathedral, and let them be join'd;
Without heſitation, the name of a town
In Hertford county, will plainly be ſhewn.

III. Rebus by Mr. Th. Manifold,

One thouſand and one pray combine,
And five times ten to the ſame join,
Then twenty hundred weight juſt take;
Theſe rightly connect and they'll make,
Of an heroic bard the name,
Which ſtands firſt on the liſts of fame.

IV. Rebus by Mrs. Roberts.

A damſel, a Trojan, by Ajax belov'd,
A faithful ſmall pledge by the ladies belov'd,
A king of Ithaca who fell by his ſon,
A painter of Urbin none's ever out-done,
And a fam'd Lydian queen by great Hercules won;
Theſe initials connect and you'll quickly diſcover,
The name of a town where I bleſt my fond lover.

V. Rebus by Mr. John Eadon, jun.

One fifth of a river that poets oft feign,
To flow thro' the regions where Pluto does reign;
Three fourths of a place that is heated by fire,
Will diſcover a paſſion ye fair ones inſpire.

VI. Rebus by Mr. George Stevenſon, Schoolmaſter, at Hazon.

A thouſand and one, with two fifties, will make
The name of a place where a thief you may take.

⁂ *The number of prizes are eight, to be determined by lot, viz. one of* 10 *and one of* 8 *diaries for the ſolutions of the prize-enigma; two of* 10 *diaries each for the general ſolutions of the enigmas; two of* 8 *diaries each for the ſolutions of the queries and paradoxes; alſo one of* 12 *and one of* 8 *diaries for the ſolution of the prize-queſtion. The competitors for the prizes given for the ſolutions of the prize enigma and prize queſtion, muſt ſend their letters, containing thoſe ſolutions, before Candlemas day; and all other letters for the uſe of the Diary, muſt be ſent before the* 1*ſt of May. — Our correſpondents are requeſted to make their compoſitions as ſhort as poſſible with propriety; as many are unavoidably omitted from their too great length. They are not however always to conclude that their pieces are rejected when they do not ſee them inſerted the* 1*ſt or* 2*d year after they are ſent; becauſe they are often kept back for ſeveral years, thro' the great number that come to hand, that we may give every one his turn. — Solutions to be ſent with all new propoſitions.*

ANSWERS to the MATHEMATICAL QUESTIONS.

I. Queſtion 742 anſwered by Mr. Tho. Truſwell.

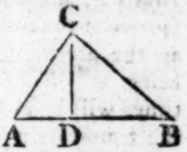
Put the given numbers in the queſtion $= a$ and b, multiply the two equations together, and divide by xy, ſo ſhall $x^4 - y^4 = ab$; hence $x = \sqrt[4]{ab + y^4}$; this ſubſtituted for x in the 2d equation, and reduced, we obtain $4y^8 - \overline{a^2 - 4ab + b^2} . y^4 = - ab^3$; then by compleating the ſquare, &c. is found $y = 16$; and then $x = 40$; the two ages.

The ſame by Mr. Wm. Reynolds.

Put $zy = x$, which ſubſtitute in the original equations, and divide by y, ſo ſhall $z^3y^2 + zy^2 = a$, and $z^2y^2 - y^2 = bz$; hence $y^2 = \frac{a}{z^3 + z} = \frac{bz}{z^2 - 1}$; this gives $bz^4 - \overline{a - b} . z^2 = - a$; dividing by b, compleating the ſquare, &c. gives $z = 2{\cdot}5$. Then $y = 16$, and $x = 40$, the ages.

Ingenious anſwers were alſo given by Meſſrs Barker, Bartlett, Beckett, Branſby, Cole, Dening, Dowden, Eadon, Fatherley, Francis, Gruby, Hartley, Hodge, Jackſon, Jefferſon, Kelly, Lean, Mabbott, Mole, Moulſdale, Ovington, Penberthy, Philarithmus, Phillips, Roberts, Robinſon, Rowe, Sharp, Mrs. Elea. Suggett, Taylor, Terril, Treleaſe, Walton, White, Willes, Williams, and Wilſon. Who generally agree that there was ſome truth in the young lady's aſſertion.

II. Queſtion 743 anſwered by Mr. John Eadon, Jun.



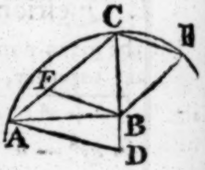
Put $AC + AD = 26 = a$, $BC + BD = 37 = b$, and $CD = x$. Then $a : x :: x . x^2 \div a = AC - AD$, $\therefore \frac{1}{2} a - \frac{1}{2} x^2 \div a = \overline{a^2 - x^2} \div 2a = AD$; in like manner $\overline{b^2 - x^2} \div 2b = BD$. Conſequently the area $= \overline{a^2 - x^2} . x \div 4a + \overline{b^2 - x^2} . x \div 4b = \overline{a + b} \times \overline{abx - x^3} \div 4ab$ a max. or $abx - x^3$ a max. Its fluxion put $= 0$, gives $ab - 3x^2 = 0$, and $x = \sqrt{\frac{1}{3} ab}$. Then $AC = \frac{1}{2} a + \frac{1}{6} b = 19\frac{1}{6}$, and $BC = \frac{1}{2} b + \frac{1}{6} a = 22\frac{5}{6}$, and $AB = \frac{1}{3} a + \frac{1}{3} b = 21$ the baſe.

By Mr. Kelly, Schoolm. Little Ruſſel-ſtreet, Bloomſbury.

Let $a = 26$, $b = 37$, $x = AD$, and $y = BD$. Then $a - x = AC$, $b - y = BC$, and (Eucl. I. 47) $a^2 - 2ax = b^2 - 2by = CD^2$, hence $y = \overline{b^2 - a^2 + 2ax} \div 2b$; $\because AB = \overline{b^2 - a^2 + 2ax + 2bx} \div 2b = \overline{b + a} \times \overline{b - a + 2x} \div 2b$; and $\overline{b + a} \times \overline{b - a + 2x} \times \sqrt{\overline{a^2 - 2ax}} \div 4b =$ the area a max. or $\overline{b - a + 2x}|^2 \times \overline{a - 2x}$ a max. Its fluxion $= 0$, gives $x = \frac{1}{2} a - \frac{1}{6} b$, and all the reſt as above.

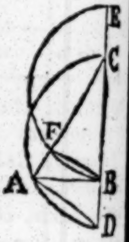
And according to theſe methods were the ſolutions given by Meſſrs. Barker, Bartlett, Beckett, Cole, Dening, Dowden, Ellis, Fatherley, Francis, Gruby, Hartley, Hedley, Jackſon, King, Lean, Mabbott, Mole, Moulſdale, Ovington, Parnel, Philarithmus, Phillips, Reynolds, Roberts, Robinſon, Rowe, I. Saul, J. Saul, Sharp, Spicer, Mrs. Suggett, Taylor, Terril, Treleaſe, Truſwell, Walton, White, Willes, Williams, and Wilſon.

III. Queſtion 744 anſwered by Mr. Nathan Parnel.



Let ABC be the triangle, having BC $\perp$ to the horizon. Draw AD making the $\angle$ CAD $=$ ACD, and meeting CB (produced if neceſſary) in D. With center D and radius DA $=$ DC deſcribe a circle meeting BE $\parallel$ AC in E; draw CE and BF $\parallel$ CE meeting AC in F the point required.—For FB being both $\parallel$ and $=$ CE, the time of deſcending down FB $=$ the time in CE $=$ the time in CA.

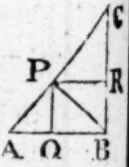
Otherwiſe by Mr Wm. Francis, Maſter of Shinfield School.



ABC being the triangle, draw AD $\perp$ AC meeting CB produced in D. In BC produced take BE $=$ DC, on which diameter deſcribe a circle cutting AC in F the point required. – For, draw OB, and the ſemicircle DAC; then the time in FB $=$ time in EB $=$ time in CD $=$ time in CA.

Various other ingenious conſtructions were given by Meſſ. Cole, Edwards, Hartley, Hodge, Jackſon, Lean, Moulſdale, Ovington, Philarithmus, Reynolds, I. Saul, J. Saul, F. Taylor, R. Taylor, Treleaſe, Walton, White, and Wilſon.

Another Solution by Mr. Alex. Rowe.

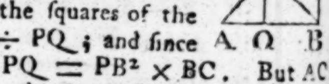


Let ABC be the given triangle, and P the required point. Join PB, and draw PQ and PR $\perp$ AB and BC. Now the ſquares of the times being directly as the ſpaces and inverſely as the accelerating forces, and the forces on CA and PB being as CB $\div$ CA and PQ $\div$ PB, the ſquares of the times will be as $CA^2 \div CB$ and $PB^2 \div PQ$; and ſince the times are equal, therefore $CA^2 \times PQ = PB^2 \times BC$. But AC : CB : : AP : PQ $= AP \times BC \div CA$; this being ſubſtituted for it, the equation becomes $CA \times AP = PB^2$.—Put now AC $= a$, AB $= b$, BC $= c$, and AP $= x$. Then $a : c :: x : cx \div a = PQ$, and $a : b :: a - x : \overline{a - x} \,.\, b \div a = PR = BQ$, $\because$ $PB^2 = c^2x^2 \div a^2 + \overline{a - x}|^2 \,.\, b^2 \div a^2 = CA \times AP = ax$; this equation gives $x^2 - \frac{a^2 + 2b^2}{a}x = -b^2$, and $x = \frac{a^2 + 2b^2 - \sqrt{a^4 + 4b^4}}{2a}$.

Algebraical ſolutions were alſo given by Meſſrs. Barker, Dowlen, Eadon, Fatherley, Gruby, Hedley, Jefferſon, Mole, Phillips, Roberts, Robinſon, Terril, Truſwell, Willes, and Williams.

IV. Queſtion 745 anſwered by Mr. Wm. Cole.

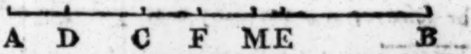
In DC produced take CE $=$ AD, and EF $=$ a mean proportional between AD and DE, as alſo FB $=$ FC, and it is done.—For FB^2 or



$$CF^2 = CE^2 + EF^2 + CE \times 2EF$$
$$= CE^2 + CE \times DE + CE \times 2EF$$
$$= CE \times \overline{DE + CE + 2EF} = CE$$
$$\times \overline{DC + 2CE + 2EF} = CE \times \overline{DC + 2CF} = AD \times DB.$$

The ſame anſwered by Mr. Thomas Moſs.

Geom. Analyſis. Conceive



BC, biſected in E, to be the roduced part required: then, by the prob. and hyp. BD : CE :: CE (BE) : AD, or by diviſion BD — CE : CE :: CE — AD : AD, or if CF = AD) BD — CE : CE :: CE — CF : CF, that is DE : CE :: FE : FC; or, again by diviſion, DE — CE : CE :: FE — FC : FC, that is (if FM = CF or AD) DC : CE :: ME : CF, or DC × CF = CE × ME. But DC, CF, and CM are given; and herefore the problem is evidently reduced to this, to produce CM (= 2CF or 2AD) ſo that the rectangle under CE and ME ſhall be = the iven rect. DC × CF or DC × AD. Whence the following conſtr.

Conſtr. In AC produced take CF and FM each = AD; then, by rob. 18, pa. 106, Simpſon's Geom. produce CM, ſo that CE × ME may be = DC × CF; laſtly, in AE produced take EB = EC, and t is done.

Demonſtr. By conſtr. DC : CE :: ME : CF or MF; then by compoſ. DC + CE : CE :: ME + MF : MF, or DE : CE (BE) :: FE : FC; nd again by compoſ. DE + BE : BE (CE) :: EF + CF (CE) : CF = AD, that is BD : CE :: CE : AD, or BD × AD = CE².

Nearly in the ſame manner were ſolutions given by Meſſrs. Barker, Dowden, Ellis, Fatherley, Francis, Hartley, Jackſon, Jefferſon, Lean, Mabbott, Moulſdale, Ovington, Parnel, Philarithmus, Phillips, Rey-olds, Roberts, Robinſon. Rowe, I. Saul, J. Saul, F. Taylor, R. Tay-r, Terril, Treleaſe, Walton, White, Williams, and Wilſon.

V. Queſtion 746 anſwered by the Rev. Mr. Lawſon.

This is the 33d queſtion of Diophantus's 5th book. And the 14th f Vieta's 5th book of Zetetics. It is alſo inſerted by Dr. Saunderſon mong his Diophantine queſtions. They all exemplify by the addition f the number 60. But the epigram implies that any number at pleaure may be added. Alexander Anderſon, in his 4th Mathematical Exrcitation, has reviſed Vieta's ſolution, and ſhewn that the limits are ot there pointed out with ſufficient accuracy. To trace this problem hrough its limits, when fractions are allowed, would be much too long or the Diary: I therefore ſend only a ſhort ſolution, which I was faoured with by my worthy and moſt ingenious friend the Rev. Mr. Wildbore.

Let $x =$ the number of pints at 8 pence, and $y =$ thoſe at 5. Then $x + 5y =$ price of the whole, which muſt be a ſquare; let it $= {}^2 - 2nz + n^2$; to this an integer being added muſt make a ſquare hoſe root is $x + y$; let that integer be $4nz$, then $z + n = x + y$, nd $8x + 5y = 3x + 5y + 5n = z^2 - 2nz + n^2$; whence $x = z^2 - \overline{2n + 5} \cdot \frac{1}{3}z + \frac{1}{3}n^2 - \frac{5}{3}n$. Let $z = 3u$, and $n^2 - 5n = 3mn$; then $n = 3m + 5$, and $x = 3u^2 - \overline{2m + 5} \cdot 3u + 3m^2 + 5m$, alſo $y = 3u \cdot \overline{2m + 6} - 3u^2 - 3m^2 - 2m + 5$, and $nx = 12u \cdot \overline{3m + 5}$ which muſt be ſo given as that u may be an inger, and m an integer or $=$ [illegible], otherwiſe no anſwer in integers can be obtained. And hence all the poſſible limits both for whole numbers and fractions, and for all values of $4nz$, are readily found. For that x may be poſitive, it is neceſſary that $3u^2 + 3m^2 + 5m$ be greater than $3u . \overline{2m + 5}$, and hence u greater than $m + 2\frac{1}{2} + \sqrt{3\frac{1}{3}m + 6\frac{1}{4}}$; and that y may be poſitive, u muſt be leſs than $m + 3 + \sqrt{5\frac{1}{3}m + 10\frac{2}{3}}$. *Ex. gr.* if $m = 0$, u muſt be greater than 5 and leſs than $3 + \sqrt{10\frac{2}{3}}$; in which caſe therefore the only integral value of u is 6; and hence we find $x = 18$, and $y = 5$. Now 18 pints at 8 pence come to 144, and 5 at 5 pence to 25; then $144 + 25 = 169 = 13^2$, to which adding $4nz = 360$, it becomes $529 = 23^2 = \overline{x + y}|^2$ as required.

The ſame by Mr. Thomas White.

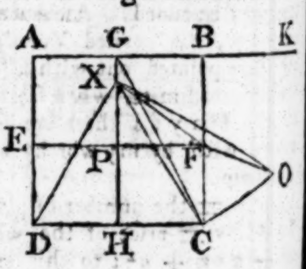
Let x and y = the number of pints at 8 pence and 5 pence, and n = the given number. Then $8x + 5y$ = a ſquare = ſuppoſe $\overline{\frac{1}{2}z - \frac{1}{2}v}|^2$, and $8x + 5y + n = \overline{x + y}|^2$ = ſuppoſe $\overline{\frac{1}{2}z + \frac{1}{2}v}|^2$; by ſubtracting, $n = vz$, and $z = n \div v$; this ſubſtituted in the 2nd equation gives $x + y = \overline{n + v^2} \div 2v$, and $y = \overline{n + v^2} \div 2v - x$; which values of y and z written in the firſt equation, &c. give

$$x = \frac{\overline{n - v^2}|^2 - 10v . \overline{n + v^2}}{12v^2}, \text{ and } y = \frac{16v . \overline{n + v^2} - \overline{n - v^2}|^2}{12v^2},$$

where v may be taken at pleaſure provided $\overline{n - v^2}|^2$ is greater than $10v . \overline{n + v^2}$ and leſs than $16v . \overline{n + v^2}$.

Solutions were alſo given by Meſſrs. Barker, Becket, Dowden, Fatherley, Francis, Gruby, Jackſon, Jefferſon, Lean, Mole, Moulſdale, Ovington, Parnel, Philarithmus, Phillips, Reynolds, Roberts, Robinſon, Rowe, Suggett (Mrs.) F. Taylor, Terril, Walton, Williams, and Wilſon.

VI. Queſtion 747 anſwered by Mr. George Sanderſon.



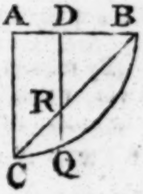
The figure being conſtructed as in the queſtion, join XC and GC, and in GB produced take GK = GC. Then BK is the greater ſegment of AB divided in extreme and mean proportion by Eucl. II. 11, and XF = the ſame greater ſegment by Hobbes: But it is to be proved that XF is greater than BK. In order to which make CO ⊥ XC and = CF = ½CX, and join FO and XO: then the right-angled triangles XCO and GCH having XC and CO in the one equal to GH and HC in the other, have XO = GC and ∠ COX = ∠ HCG (Eucl. I. 4): again, from the equal angles DCF and XCO take the common angle XCF, then FCO = XCD, and theref. the △ FCO is equilateral, being ſimilar to the △ XCD, whence the ∠ COF = FCO = XCH; but XCH is leſs than GCH or COX, ∴ COF is leſs than COX, and XF + FO or XF + GB is greater than XO (Eucl. I. 20); but XO = GC = GK = GB + BK, ∴ GB + XF is greater than GB + BK, and XF greater than BK.

The ſame by Mr. John Fatherley.

Firſt $GC = \sqrt{GH^2 + HC^2} = \sqrt{GH^2 + \frac{1}{4}GH^2} = \sqrt{\frac{5}{4}GH^2} = \frac{1}{2}GH\sqrt{5}$, and $\because BK = GK - GB = GC - GB = \frac{1}{2}GH\sqrt{5} - \frac{1}{2}GH = \frac{1}{2}GH \times \overline{\sqrt{5} - 1}$ = Eucl. greater ſeg. Again, $XH = \sqrt{XC^2 - CH^2} = \sqrt{GH^2 - \frac{1}{4}GH^2} = \sqrt{\frac{3}{4}GH^2} = \frac{1}{2}GH\sqrt{3}$, and $XP = XH - PH = \frac{1}{2}GH\sqrt{3} - \frac{1}{2}GH = \frac{1}{2}GH \times \overline{\sqrt{3} - 1}$, then $XF = \sqrt{XP^2 + PF^2} = \sqrt{\frac{1}{4}GH^2 \times \overline{\sqrt{3} - 1}^2 + \frac{1}{4}GH^2} = \frac{1}{2}GH\sqrt{5 - 2\sqrt{3}}$ = Hobbes's greater ſegment, different from the former or Euclid's, and therefore is wrong: for if it were right, then would $\sqrt{5 - 2\sqrt{3}} = \sqrt{5} - 1$, and by ſquaring, &c. the equation reduces at laſt to $49 = 48$, an abſurdity.

Various other demonſtrations were given by Meſſrs. Barker, Dowden, Francis, Hartley, Jackſon, Jefferſon, Lean, Moulſdale, Ovington, Parnel, Philarithmus, Phillips, Reynolds, Roberts, Robinſon, Rowe, R. Taylor, Terril, Walton, White, Williams, and Wilſon.

VII. Queſtion 748 anſwered by Mr. Rob. Phillips.



To find when R and Q are in the ſine DRQ of the arc BQ; firſt put $AB = AC = 60 = \frac{1}{2}d$, $BD = x$, $BQ = z$, $16\frac{1}{12} = s$, t = the time of the bodies in motion, and v = the velocity of Q. Then $DQ = \sqrt{dx - x^2}$, and $v = 2\sqrt{s \times DQ} = 2\sqrt{s} \times \sqrt[4]{dx - x^2}$; alſo $\dot{z} = \frac{1}{2}d\dot{x} \div DQ = \frac{1}{2}d\dot{x} \div \sqrt{dx - x^2}$; $\because \dot{t} =$

$$\frac{\dot{z}}{v} = \frac{d\dot{x}}{4s^{\frac{1}{2}} . \overline{dx - x^2}|^{\frac{3}{4}}} = \frac{d^{\frac{1}{4}}\dot{x}}{4s^{\frac{1}{2}}} \times : 1 + \frac{3x^{\frac{1}{4}}}{4d} + \frac{3 . 7x^{\frac{5}{4}}}{4 . 8d^2} + \frac{3 . 7 . 11x^{\frac{9}{4}}}{4 . 8 . 12d^3}$$

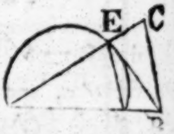
&c. and $t = \frac{d^{\frac{1}{4}}x^{\frac{1}{4}}}{s^{\frac{1}{2}}} \times : 1 + \frac{3x}{4 . 5d} + \frac{3 . 7x^2}{4 . 8 . 9d^2} + \frac{3 . 7 . 11x^3}{4 . 8 . 12 . 13d^3}$ &c. the time down the arc BQ.

Again $\sqrt{s} : \sqrt{x} :: 1'' : \sqrt{x} \div \sqrt{s}$ = the time of falling down DR, and DR : BR :: time in DR : $\sqrt{2x} \div \sqrt{s} = t$ the time in BR.

Theref. $\sqrt{2x} = \sqrt[4]{dx} \times : 1 + \frac{3x}{4 . 5d} + \frac{3 . 7x^2}{4 . 8 . 9d^2} + \frac{3 . 7 . 11x^3}{4 . 8 . 12 . 13d^3}$ &c. from which equation is found $x = 37.219$. Conſequently $t = \sqrt{2x \div s} = 2.151''$ the time of the bodies in motion.

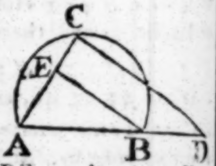
Other ingenious ſolutions were given by Meſſrs. Barker, Dowden, Fatherley, Jackſon, Ovington, Parnel, Philarithmus, J. Phillips, Roberts, Robinſon, M. Taylor, Terril, Willies, Wilſon, and Woolcott.

VIII. Queſtion 749 anſwered by Mr. Wm. Walton.



Make AB $=$ the given baſe, which divide in D in the given ratio; on AD deſcribe the ſegment of a circle capable of containing the given vertical angle, and from B apply to it BE $=$ the given line; draw AE and DE, and laſtly BC $\parallel$ DE meeting AE produced in C. Then is ABC the triangle required.—For AB $=$ the given baſe and BE $=$ the given line by conſtr. alſo, becauſe of the parallels, AE : EC : : AD : DB the given ratio, and $\angle$ C $= \angle$ AED the given angle.

The ſame by Mr. Robert Hartley.



Upon the given baſe AB deſcribe a ſegment capable of containing the given vertical angle; and produce AB till AB be to BD in the given ratio; apply DC a 4th proportional to AB, the given line, and AD; draw AC and BC, and ABC will be the triangle.—For, drawing BE $\parallel$ DC, BE : BA : : DC : DA : : (by conſtr.) the given line : BA; $\because$ BE $=$ the given line. Again AE : EC : : AB : BD the given ratio by conſtruction.

Elegant conſtructions were alſo given by Meſſrs. Cole, Crakelt, Dowden, Edwards, Francis, Jackſon Ovington, Parnel, Philarithmus, Phillips, Roberts, I. Saul, J. Saul, R. Taylor, Treleaſe, and Wilſon. And algebraical ſolutions by Meſſrs. Barker, Fatherley, Lean, Mabbott, Phillips, Reynolds, Robinſon, Rowe, Terril, White, and Williams.

IX. Queſtion 750 anſwered by Mr. Wm Sewell.

By reducing the given equation we have $XX + X + x^{-1} = 0$; and in order that this be an equation derived from a minimum, the fluxion of the minimum will be found by multiplying this equation by $\dot{x}$, whence $XX\dot{x} + X\dot{x} + x^{-1}\dot{x} = 0$; but $x^{-1}\dot{x} = \dot{X}$. and $X\dot{x} = xX\dot{X}$, theref. by ſubſtitution $XX\dot{x} + xX\dot{X} + \dot{X} = 0$, or $X\dot{x} + xX + X^{-1}\dot{X} = 0$, the fluent of which gives $xX +$ hyp. log of X, an expreſſion whoſe value, when a minimum, is evidently obtained as per queſtion. But to obtain an expreſſion conſtituted of the variable quantity x only, let that above exhibited be conſidered as a logarithm, then it is plain that its natural value $x^{x}X$ will be a minimum when the ſaid log. is ſo. By the ſame way of reaſoning, if the laſt found expreſſion be alſo conſidered as a log. its natural value $x^{x^{x}}$ will evidently be the expreſſion required.

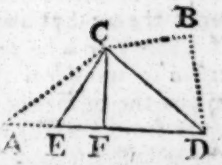
Meſſrs. Barker, Fatherley, Francis, Jackſon, J. Phillips, R. Phillips, Roberts, Robinſon, Rowe, M. Taylor, and Terril alſo anſwered the ſame.

X. Queſtion 751 anſwered by the Rev Mr. Wildbore.

On the given ſide CD as hypothenuſe make a right-angled $\triangle$ BCD, whoſe legs may be in the ratio of the ſide of a ſquare to its diagonal, and make the leſs leg CB the third ſide CE of the $\triangle$ CDE, whoſe baſe DE and ſide DC are the given ones; and the thing is done.

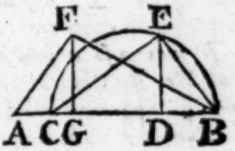
Dem. Take FA $=$ FD; then when EA $\times$ EC is a maximum, FB

$\times EA \times EC$ is a maximum becauſe ED is given; but $ED \times EA = \overline{CD + CE} \times \overline{CD - CE} = CD^2 - CE^2 = BD^2$, ∵ $EC \times BD^2$ or $BC \times BD^2$ is a maximum; wherefore, by theor. 18 of Mr. Simpſon on the max. and min. of geom. quantities, $BD^2 = 2\,BC^2$ as per conſtruction.



Cor. If AD be given inſtead of ED, and the ſolid $ED \times EA \times EC$ be required to be a maximum; then ſince the ſolid $BC \times BD^2$ is ſtill a maximum, $BD^2 = 2\,BC^2$ as before; which is the 439th Diary queſtion. It is moreover evident that the ſame ſolid $ED \times EA \times EC$ being to be a maximum, if inſtead of ED, we have given EA, or the ∠ ECD, or CED, or a line from C to ED ſpecified how drawn, or any ſimilar datum along with CD, ſtill $BD^2 = 2\,CE^2$, and the ſolution is effected with nearly the ſame facility as before.

The ſame by Mr. Nathan Parnel.



Make $AB =$ the given baſe, $BC =$ the given ſide, on which deſcribe the ſemicircle CEB; divide BC in D ſo that $CD = 2DB$, and draw DE ⊥ BC; join B, E & C, E; then with the ſides $AF = BE$, and $BF = BC$, conſtitute on AB the △ AFB, which will be that required.

For, let fall the ⊥ FG, then $\overline{FB^2 - FA^2} \div AB = GB - GA$, ∵ per queſt. $FA \times \overline{FB^2 - FA^2} \div AB$ is a max. and ſince AB is given, $FA \times \overline{FB^2 - FA^2} = BE \times \overline{BC^2 - BE^2} = BE \times CE^2$ is likewiſe a max. which will be when $BC \times CD$ or CE^2 is $= 2\,BE^2$ or $BC \times 2\,BD$ by Simp. Geom. p. 208, theor. 18, or when $CD = 2\,DB$ as by conſtruct.

Nearly in the ſame manner were conſtructions given by Meſſrs. Jackſon, Moulſdale, Philarithmus, Sanderſon, R. Taylor, and Wilſon.

An Algebraical Solution by Mr. Joel Lean.

Let $AB = a$, $BF = b$, and $AF = x$. [See the laſt fig.] Then $a : b + x :: b - x : \overline{b^2 - x^2} \div a = GB - GA$; hence $\overline{b^2 x - x^3} \div a$ or $b^2 x - x^3 =$ a max. whoſe fluxion equated to 0, gives $x = b\sqrt{\tfrac{1}{3}} = AF$.

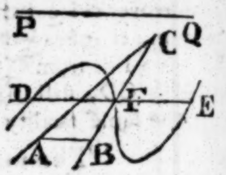
Algebraical ſolutions were alſo given by Meſſrs. Barker, Cole, Dowden, Ellis, Fatherley, Francis, Gruby, Jackſon, King, Mabbott, Moulſdale, Ovington, Philarithmus, J. Phillips, R. Phillips, Reynolds, Roberts, Robinſon, Rowe, Sanderſon, I. Saul, J. Saul, R. Taylor, Terril, Walton, White, Willes, Williams, and Wilſon.

XI. Queſtion 752 anſwered by Plus Minus.

If neither the abſciſſa x nor ordinate y be parallel to the line given in poſition, change the inclination of one of them (ſuppoſe the ordinate) that it may be parallel to it, in the ſame manner as in my ſolution of the prize queſt. 1774 I changed it to make it parallel to the aſymptote; and let the equation reſulting be $v^3 + \overline{a + bz} \cdot v^2$ &c. $= 0$; now conſtruct the locus of the equation $3v = -a - bz$, and it will cut the curve in the point or points ſought.

Note, the line given in poſition muſt not be parallel to an aſymptote, nor to the diameters of the diverging-parabola, nor to the general diameter of the cubic parabola; for if it be, it cannot cut the curve in 3 points. If either y or x be parallel to the line given in poſition, there is no occaſion to transform the equation, but only to make $3y$ or $3x$ equal to minus the coefficient of y^2 or x^2 reſpectively, the cube y^3 or x^3 having unity for its coefficient. If y^2 or x^2 be not found in the given equation, the abſciſſa itſelf, or the firſt ordinate itſelf, cuts the curve in the point ſought reſpectively.

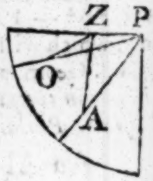
The ſame by Mr. Roberts, Teacher of Mathematics.



Let $y^3 + \overline{ax+b}\,.\,y^2 + \&c. = 0$ be the equa. of the curve to the abſciſſa AC and ordinates ∥ PQ the line given in poſition. Take the abſciſſa $AC = b \div a$, and the ordinate $AB = \frac{1}{3}b$; draw CB cutting the curve in F, thro' which draw DFB ∥ PQ, and it will be the line ſought making $FD = FE$; as is evident from pa. 78, Emerſon on curves.

It was alſo anſwered nearly in the ſame manner by Mr. J. Ovington, and Mr. R. Phillips; and the Rev. Mr. Wildbore gave the ſolution from Art. 4. Appendix to Mr. Maclaurin's Algebra. The ſolu. by the propoſer, C. Bumpkin, which was unluckily miſlaid, was from Mr. Landen's Reſidual Analyſis.

XII. Queſtion 753 anſwered by Mr. Mic. Taylor.



Let ZP be the meridian of London, P the pole, Z the zenith, A Aldebaran, and O α Orion when the ∠ OZA, the difference of their azimuths, is a max. or a min. It is obvious that when this is the caſe, its fluxion being then nothing, the fluxions of the angles AZP and OZP muſt be equal. Now by Art 273, Crakelt's Tranſlation of Mauduit's Trigon. $\dot{P} : A\dot{Z}P :: \text{ſin.}^2\,ZA : \text{coſ.}\,ZP - \text{coſ.}\,PA \times \text{coſ.}\,ZA$, and $\dot{P} : O\dot{Z}P :: \text{ſin.}^2\,ZO : \text{coſ.}\,ZP - \text{coſ.}\,PO \times \text{coſ.}\,ZO$; conſequently, $\dot{P}$ being conſtant and common,

$$\frac{\text{coſ}\,ZP - \text{coſ.}\,PA \times \text{coſ.}\,ZA}{\text{ſin.}^2\,ZA} = \frac{\text{coſ.}\,ZP - \text{coſ.}\,PO \times \text{coſ.}\,ZO}{\text{ſin.}^2\,ZO}.$$

—Put c and s for the ſine and coſine of ZP, a and b ſine and coſ. PA, d and e ſine and coſ. ∠ APO, p and q ſine and coſ. PO, and z the coſ. ∠ OPZ, or what α Orion wants of the merid. Then $ez - d\sqrt{1-z^2} = \text{coſ.}\,\angle APZ$; and, by ſpherics, $cpx + qs = \text{coſ.}\,ZO$, and $caez - cad\sqrt{1-z^2} + bs = \text{coſ.}\,ZA$; then $1 - \overline{cps+qs}\big|^2 = \text{ſin.}^2\,ZO$, and $1 - \overline{acez - axd\sqrt{1-z^2} + b.}\big|^2 = \text{ſin.}^2\,ZA$; make theſe ſubſtitutions in the above equation, ſo ſhall

$$\frac{s - abcez + abcd\sqrt{1-z^2} - sb^2}{1 - \overline{acez - acd\sqrt{1-z^2} + sb}\big|^2} = \frac{s - cpqz - sq^2}{1 - \overline{cpz + sq}\big|^2}. \left\{\begin{array}{l}\text{When } z\\ \text{may be}\\ \text{found.}\end{array}\right.$$

The Rev. Mr. Wildbore alſo ſolved this queſtion, not only for the max. or min. but alſo for a given quantity. Solutions were alſo given by Meſſrs. Nauticus, J. Ovington, R. Phillips, Ste. Roberts, and Wm. Terril.

XIII. Queſtion 754 anſwered by the Rev. Mr. Wildbore.

The given ſeries is $= \frac{4}{4.7.11.15} - \frac{4}{5.9.14.19} + \frac{4}{6.11.17.23} - \frac{4}{7.13.20.27}$ &c. Now

$$\frac{1}{4.7.11.15} = \frac{6}{11.12.14.15} = 6 \times \overline{\frac{1}{11} - \frac{1}{12}} . \overline{\frac{1}{14} - \frac{1}{15}} = 6 \times : \frac{1}{11.14} - \frac{1}{11.15} - \frac{1}{12.14} + \frac{1}{12.15};$$

$$\frac{1}{5.9.14.19} = \frac{6}{14.15.18.19} = 6 \times \frac{1}{14} - \frac{1}{15} . \frac{1}{18} - \frac{1}{19} = 6 \times : \frac{1}{14.18} - \frac{1}{14.19} - \frac{1}{15.18} + \frac{1}{15.19};$$

$$\frac{1}{6.11.17.23} = \frac{6}{17.18.22.23} = - - - - - - - - 6 \times : \frac{1}{17.22} - \frac{1}{17.23} - \frac{1}{18.22} + \frac{1}{18.23};$$

$$\frac{1}{7.13.20.27} = \frac{6}{21.26.27} = - - - - - - - - 6 \times : \frac{1}{20.26} - \frac{1}{20.27} - \frac{1}{21.26} + \frac{1}{21.27}.$$

Moreover $\frac{1}{11.14} - \frac{1}{14.18} + \frac{1}{17.22} - \frac{1}{20.26}$ &c. $= 3 \times : \frac{1}{21.22} - \frac{1}{27.28} + \frac{1}{33.34} - \frac{1}{39.40}$ &c.

$= 3 \times \frac{1}{21} - \frac{1}{22} - \frac{1}{27} + \frac{1}{28} + \frac{1}{33} - \frac{1}{34} - \frac{1}{39}$ &c. $= \frac{1}{7} - \frac{1}{9} + \frac{1}{11} - \frac{1}{13}$ &c. $- \frac{3}{2} \times : \frac{1}{11} - \frac{1}{14} + \frac{1}{17}$ &c.

and $\frac{1}{11.15} - \frac{1}{14.19} + \frac{1}{17.23}$ &c. $= 12 \times : \frac{1}{44} - \frac{1}{45} - \frac{1}{56}$ &c. $= 3 \times : \frac{1}{11} - \frac{1}{14} + \frac{1}{17}$ &c. $- 4 \times : \frac{1}{15} - \frac{1}{19}$ &c.

and $\frac{1}{12.14} - \frac{1}{15.18} + \frac{1}{18.22}$ &c. $= \frac{1}{3} \times : \frac{1}{7} - \frac{1}{8} - \frac{1}{9} + \frac{1}{10} + \frac{1}{11} - \frac{1}{12} - \frac{1}{13}$ &c.

and $\frac{1}{12.15} - \frac{1}{15.19} + \frac{1}{18.23}$ &c. $= \frac{4}{3} \times : \frac{1}{15} - \frac{1}{16} - \frac{1}{19}$ &c. $= \frac{4}{3} \times : \frac{1}{15} - \frac{1}{19}$ &c. $- \frac{1}{3} \times : \frac{1}{4} - \frac{1}{5} + \frac{1}{6}$ &c.

Which ſeveral ſeries collected give

$\frac{2}{3} \times : \frac{1}{7} - \frac{1}{9} + \frac{1}{11}$ &c. $- \frac{1}{6} \times : \frac{1}{4} - \frac{1}{5} + \frac{1}{6}$ &c. $- \frac{9}{2} \times : \frac{1}{11} - \frac{1}{14} + \frac{1}{17}$ &c. $+ \frac{16}{3} \times : \frac{1}{15} - \frac{1}{19} + \frac{1}{23}$ &c.

Now the ſeries $\frac{x^2}{2}-\frac{x^5}{5}+\frac{x^8}{8}-\frac{x^{11}}{11}+\frac{x^{14}}{14}$ &c. = the fluent of $\frac{x\dot{x}}{1+x^3}$, which when $x=1$ is $=\frac{1}{3}$ arc to ſine $\frac{1}{2}\sqrt{3}$ (rad. 1) $-\frac{1}{3}$ hyp. log. $2=A$ ſuppoſe.

Again $\frac{x^3}{3}-\frac{x^7}{7}+\frac{x^{11}}{11}-\frac{x^{14}}{14}$ &c. = the fluent of $\frac{x^2\dot{x}}{1+x^4}$, which when $x=1$ is $=\frac{1}{2\sqrt{2}}\times$ arc to ſine $\frac{1}{2}\sqrt{2+\sqrt{2}}+\frac{1}{2\sqrt{2}}\times$ arc to ſine $\frac{1}{2}\sqrt{2-\sqrt{2}}-\frac{1}{4\sqrt{2}}\times$ hyp. log. $\frac{2+\sqrt{2}}{2-\sqrt{2}}=B$ ſuppoſe. —— Then

$\frac{1}{24}$ of the given ſeries is $=\frac{2}{3}\times\overline{1-\frac{1}{3}+\frac{1}{5}-\text{arc ſin.}\sqrt{\tfrac{1}{2}}}-\frac{1}{6}\times\overline{1-\frac{1}{2}+\frac{1}{3}-\text{h.l }2}-\frac{9}{2}\times\overline{\frac{1}{2}-\frac{1}{5}+\frac{1}{8}-A}+\frac{16}{3}\times\overline{\frac{1}{3}-\frac{1}{7}+\frac{1}{11}-B}$ the expreſſion required.

Scholium. The ſum of any ſeries of the form $\frac{1}{m}\pm\frac{1}{m+n}+\frac{1}{m+2n}\pm\frac{1}{m+3n}$ &c. will be had from the fluent of $\frac{x^{m-1}\dot{x}}{1\mp x^n}$ which is the general Coteſian form. And thus may the ſum of any other ſeries compounded like that above be found.

The ſame by Mr. Wm. Sewell.

The given ſeries reduces to $\frac{4}{4\cdot7\cdot11\cdot15}-\frac{4}{5\cdot9\cdot14\cdot19}+\frac{4}{6\cdot11\cdot17\cdot23}-$ &c. Now $\frac{1}{4}w^4-\frac{1}{5}w^5+\frac{1}{6}w^6-$ &c. $=w-\frac{1}{2}w^2+\frac{1}{3}w^3-$ hyp. log. $\overline{1+w}$, for each ſide of the equation is the fluent of $w^3\dot{w}\div\overline{1+w}$. Put x^3 for w, and A for the ſaid log. multiply each ſide of the equation by $x^{-2}\dot{x}$, take the fluents, and there will ariſe $\frac{x^7}{4\cdot7}-\frac{x^9}{5\cdot9}+\frac{x^{11}}{6\cdot11}-\frac{x^{13}}{7\cdot13}+$ &c. $=x-\frac{x^3}{2\cdot3}+\frac{x^5}{3\cdot5}-B$.

Again write y^3 for x, mult. by $\dot{y}$, and take the fluents, ſo will $\frac{1}{2}\times:\frac{y^{22}}{4\cdot7\cdot11}-\frac{y^{28}}{5\cdot9\cdot14}+\frac{y^{34}}{6\cdot11\cdot17}-$ &c. $=\frac{y^4}{4}-\frac{y^{10}}{2\cdot3\cdot10}+\frac{y^{16}}{3\cdot5\cdot16}-C$.

Again write z^2 for y, mult. by $\dot{z}$, and the fluents give $\frac{1}{6}\times:\frac{z^{45}}{4\cdot7\cdot11\cdot15}-\frac{z^{57}}{5\cdot9\cdot14\cdot19}+\frac{z^{69}}{6\cdot11\cdot17\cdot23}-$ &c. $=\frac{z^9}{4\cdot9}-\frac{z^{21}}{2\cdot3\cdot10\cdot21}+\frac{z^{33}}{3\cdot5\cdot16\cdot33}-D$.

Laſtly write 1 for z, multiply by 24, &c. and there will ariſe $\frac{4}{4 \cdot 7 \cdot 11 \cdot 15} - \frac{4}{5 \cdot 9 \cdot 14 \cdot 19} + \frac{4}{6 \cdot 11 \cdot 17 \cdot 23}$ &c. $= \frac{501}{770} - 24$ D the ſum required.

Now to deduce the value of D, we have

$\dot{A} = \dot{w} \cdot \overline{1+w}|^{-1}$, $\quad \therefore A =$ hyp. log. of 2;

$\dot{B} = Ax^{-2}\dot{x}$, $\quad \therefore B = -Ax^{-1} + E$;

$\dot{C} = B\dot{y} = -Ax^{-1}\dot{y} + E\dot{y}$, $\therefore C = \frac{1}{2}Ay^{-2} + Ey - F - G$;

$\dot{D} = C\dot{z} = \frac{1}{2}Ay^{-2}\dot{z} + Ey\dot{z} - F\dot{z} - G\dot{z}$,

$\therefore D = -\frac{1}{6}Az^{-3} + \frac{1}{3}Ez^3 - Fz - Gz + H - I + K + L$

$= -\frac{1}{6}A + \frac{1}{3}E - F - G + H - I + K + L$ when $z = 1$;

$\dot{E} = \dot{A}x^{-1} = 2\dot{x} \cdot \overline{1+x^2}|^{-1}$, $\therefore E = \frac{1}{4}c$, where $c = 2 \times 3{\cdot}14159$ &c.

$\dot{F} = \frac{1}{2}\dot{A}y^{-2} = 3y^3\dot{y} \cdot \overline{1+y^6}|^{-1}$,

$\therefore F = \frac{1}{2}\surd 3 \times$ arc ſin. $\frac{1}{2}\surd 3 - \frac{1}{2}$ h. l. $2 = \frac{1}{12}c\surd 3 - \frac{1}{2}$ h. l. 2;

$\dot{G} = y\dot{E} = y^{-2}\dot{A} = 2\dot{F}$, $\quad \therefore G = 2F$;

$\dot{H} = \frac{1}{6}z^{-3}\dot{A} = 2z^8\dot{z} \cdot \overline{1+z^{12}}|^{-1}$, $\therefore H = \frac{\surd 2}{6} \times$ arc ſin. $\frac{1}{2}\sqrt{2+\surd 2}$

$+$ arc ſin. $\frac{1}{2}\sqrt{2-\surd 2} - \frac{1}{2}$ h. l. $\frac{2+\surd 2}{2-\surd 2} = \frac{\surd 2}{12} \times \frac{1}{2}c -$ h. l. $\overline{\frac{2+\surd 2}{2-\surd 2}}$;

$\dot{I} = \frac{1}{3}z^3\dot{E} = 4z^8\dot{z}\,\overline{1+z^{12}}|^{-1} = 2\dot{H}$, $\quad \therefore I = 2H$;

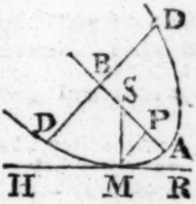
$\dot{K} = z\dot{F} = 6z^8\dot{z} \cdot \overline{1+z^{12}}|^{-1} = 3\dot{H}$, $\quad \therefore K = 3H$;

$\dot{L} = z\dot{G} = 2z\dot{F} = 2\dot{K}$, $\quad \therefore L = 2K = 6H$. Finally we obtain

$$D = \frac{1 + 4\surd 2 - 3\surd 3}{12} \times c + \tfrac{4}{3}\text{ h. l. } 2 - \tfrac{4}{3}\surd 2 \text{ h. l. } 1 + \surd 2.$$

The ſolution by the propoſer Mr. Henry Clarke is alſo very elegant, and is an excellent illuſtration of one of the propoſitions of his tranſlation of Lorgna's ſummation of ſeries, which we are obliged to omit with much regret.

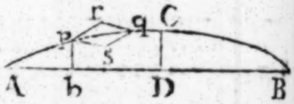
XIV. Queſtion 755 anſwered by Plus Minus.



Let the annexed figure repreſent the fruſtum ſought, placed with its axis AB oblique to the horizontal plane HR. At the point of contact M erect MS ⊥ HR, cutting the axis in S: now if the center of gravity of the fruſtum be in S, it will reſt in this poſition; if not, it will fall towards that ſide of MS on which the center of gravity lies, as is plain from mechanics; therefore that the ſolid may tumble, the center of gravity muſt be nearer to the vertex A than is the point S, or any other point where a ⊥ to a tangent cuts the axis. If AP be called x; PM, y; and c and t be the conjugate and tranſverſe ſemiaxes; then AS $= x + \overline{cct - ccx} \div tt$; and when the point of contact falls in A, or x is infinitely ſmall, AS $= cc \div t$, which being the radius of curvature at the vertex, or the neareſt approach of S towards A, is the limit beyond which the center of gravity muſt not paſs; but becauſe the greateſt fruſtum of the kind is required, I place the center as far from A as the nature of the thing will admit, viz. $= cc \div t$. So that the problem is now reduced to this, To find the point B in the axis through which I muſt cut, that the part cut off may have the diſtance of its center of gravity from the vertex equal to half the parameter of the axis. Call AB, z; then the diſtance of the center of gravity from A will be $= \dfrac{8tz - 3zz}{12t - 4z}$ which muſt $= \dfrac{cc}{t}$; hence $z = \dfrac{2}{3} \times \dfrac{cc + 2tt - \sqrt{c^4 - 5c^2t^2 + 4t^4}}{t} = (\text{when } t = 2c)\ c \times$ $\overline{3 - \sqrt{5}}$.—Had DAD been a parabolic conoid, AB had been $= \frac{3}{4}$ of the parameter of the axis.

True ſolutions were alſo given by Meſſrs. Bumpkin, Cole, Edwards, Francis, Mabbott, Parnel, Sewell, M. Taylor, Walton, and Wildbore.

XV. or Prize Queſt. 756 anſw. by the propoſer P Puzzlem



Let ADB be the ſtring when ſtraight, ACB when curved; D being the middle point in the former poſition, C in the latter. Let DC $= a$, AB $= b$, Ab $= x$, bp $= y$, Ap $= z$. Then pq being a particle of the curve, and pr, qr tangents; if ps, qs be parallel to thoſe tangents, the tenſion of the ſtring will be to the force urging the particle pq towards AB, as the ſine of psr to the ſine of rps; i. e. as $\dot{x} \div \dot{z}$ to $\dot{z} \div R$, or as $R\dot{x}$ to $\dot{z}^2$, R being the radius of curvature at p. Let the tenſion be Ang, n being a ⊥ ſection of the ſtring, g $(= 32\frac{1}{6}$ feet) the accelerating force of gravity, and bng the weight of the ſtring: then $R\dot{x} : \dot{z}^2 :: Ang : Ang\dot{z}^2 \div R\dot{x}$, the motive force urging the particle pq towards AB. Therefore $Ag\dot{z} \div R\dot{x}$ will be the accelerative force of pq in that direction; which, by the nature of the motion of a muſical ſtring, muſt be $= dy$, d being ſome invariable quantity yet unknown. From which equation we have $Ag\dot{z} \div dy\dot{x} = R = -\dot{z}^3 \div \dot{x}\ddot{y}$, $\dot{x}$ being conſidered as invariable: whence $\dfrac{1}{\dot{x}^2} \times \dfrac{Ag\dot{y}\ddot{y}}{1 + \dot{y}^2\dot{x}^{-2}} = -dy\dot{y}$. But, the value of $\dot{y}\dot{x}^{-1}$ being indefinitely ſmall in compariſon with $\dot{x}$, $1 + \dot{y}\dot{x}^{-1}$ may be conſidered as $= 1 :: Ag\dot{y}\ddot{y}\dot{x}^{-2} = -dy\dot{y}$; and the fluents give $Ag\dot{y}^2d^{-1}\dot{x}^{-2} = Age^2d^{-1} + a^2 - y^2$, $\dot{x} = \sqrt{\dfrac{Ag}{d}} \times \dfrac{\dot{y}}{\sqrt{Age^2d^{-1} + a^2 - y^2}}$, and $x = \sqrt{Aga^{-1}} \times$ circ. arc, rad. 1, ſine $\dfrac{y}{\sqrt{Age^2d^{-1} + a^2}}$, e being $= y\dot{x}^{-1}$ when $y = a$. Now the motive force urging the weight at C towards D will be to $(2Ang)$ twice the tenſion, as e to $\sqrt{1 + e^2}$, or (e being indefinitely ſmall) as e to 1: theref. if that weight be denoted by Bng, its accelerative force will be $2AgeB^{-1} = da$. Hence $e = daB \div 2Ag$; and, by ſubſtitution, $x = \sqrt{Ag}$

$\times$ circ. arc, rad. 1, ſine $\dfrac{y}{a\sqrt{1+\frac{1}{4}dB^2A^{-1}g^{-1}}}$. Where, taking $x = \frac{1}{2}b$, and $y = a$. we have $\frac{1}{2}b = \sqrt{Agd^{-1}} \times$ circ. arc, rad. 1, ſine $\overline{1+\frac{1}{4}dB^2A^{-1}g^{-1}}|^{-\frac{1}{2}}$; from whence we have $d = 4AgC^2b^{-2}$, C denoting the circ. arc, rad. 1, ſine $b \div \sqrt{b^2+B^2C^2}$. The accelerative force dy will therefore be $= 4AgC^2yb^{-2}$, and $-4AgC^2b^{-2}y\dot{y} = \dot{v}v$, v denoting the velocity of the point p towards AB. The fluents give $4AgC^2b^{-2}\times\overline{b^2-y^2} = v^2$, b being the value of y when $v = 0$: ∴ $\dot{t}$ will be $= \dfrac{-b\dot{y}}{2C\sqrt{Ag}\times\sqrt{b^2-y^2}}$, and the time $t = \dfrac{b}{2C\sqrt{Ag}} \times$ circ. arc, rad. 1, coſ. $y \div b$. Conſequently the time of a *whole* vibration will be $= b\mathcal{Q} \div C\sqrt{Ag}$, $\mathcal{Q}$ being the quadrantal arc of a circ. whoſe radius is 1.

If B be $= 0$, C will be $= \mathcal{Q}$; and the time of vibration, when no weight is faſtened to the ſtring, $= b \div \sqrt{Ag}$.

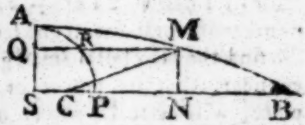
If T be the cotangent of C, and B be to b as T to C; the times of vibration of the ſtring without the weight $(Bng$ and of the ſtring with the weight, will be to each other as C to $\mathcal{Q}$ reſpectively.

If T be $=$ to 1, C will be $= \frac{1}{2}\mathcal{Q}$: and, if $B : b :: 2 : \mathcal{Q}$, the ſtring without the weight will make 2 vibrations in the time wherein the ſtring with the weight will make one vibration.

If B be very great in compariſon with b, C will be equal $b \div \sqrt{b^2+B^2C^2} = b \div BC$ very nearly. Conſequ. C being $= \sqrt{b \div B}$, the time of vibration in ſuch caſe will be $= \mathcal{Q} \times \sqrt{bB \div Ag}$.

The number of vibrations of the loaded ſtring, in the time of one vibration of a pendulum whoſe length is P, will be $= 2C\sqrt{AP} \div b$.

The ſame by the Rev. Mr. Cha. Wildbore.



Let CMB repreſent the ſtring when at its greateſt diſtance from CB, with the ſmall weight w fixed at M. Produce BM to A till the ordinate AS is ⊥ to the curve, and deſcribe the quadrant ARP. Let v = the accelerating force acting on the body at M, n = the compactneſs of a ſection of the ſtring at M, r = the radius of curvature there: then by Mac Laurin's Flux. art. 929, the tenſion of the ſtring at M is $= vnr$ (which, however, is on the ſuppoſition that the vibrations are through indefinitely ſmall diſtances,) and if nl = the ſolidity of w the given weight conſidered as of the ſame denſity with the ſtring, the motive force at M $= vnl$, ∵ by ſtatics, as $vnl : vnr$ or as $l : r :: 2\,\dot{\mathrm{M}}\mathrm{N} : \dot{\mathrm{N}}\mathrm{B} :: 2\,\dot{\mathrm{A}}\mathrm{Q} : \dot{\mathrm{Q}}\mathrm{M}$, and the curve (by the above quotation) being the trochoid indefinitely protracted, $\mathrm{Q}\dot{\mathrm{M}} = \dfrac{\mathrm{AS.NB}}{\mathrm{QR.RP}} \times \dot{\mathrm{A}}\mathrm{Q}$. Let $m = 3{\cdot}14159$; then as $\frac{1}{2}m.\mathrm{AS} = \mathrm{AP} : \mathrm{SB} :: \mathrm{RP} : \mathrm{NB}$, conſeq. $\dfrac{2\mathrm{SB}}{m} = \dfrac{\mathrm{NB.AS}}{\mathrm{RP}}$, and r

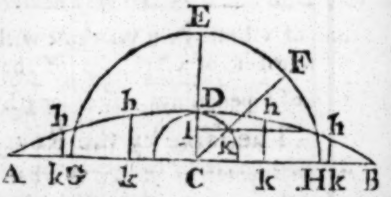
$= \frac{4SB^2}{m^2.MN} = \frac{NB^2.AS^2}{RP^2.QS} : l :: \frac{NB}{QR} : \frac{2RP}{AS}$, ∵ as $l : 2\,NB = CB = L$ the length of the ſtring :: $QR \div QS : RP \div AS$ that is :: $t =$ co-tang. RSP to rad. $1 : z =$ its arc to the ſame radius; and their ratio being thus given, or, which is the ſame thing, the rectangle under the arc z and its tangent being given $= L \div l$, they muſt both be given by reverſion of ſeries or by trial-and error. And therefore if $p =$ the given tenſion, $g =$ the force of gravity, and $G =$ the weight of the ſtring, $ngL = G$, $n = G \div gL$, $v = p \div nr = pgL \div Gr = QS.\,pgLz^2 \div \frac{1}{4}GL^2 = QS.\,4pgz^2 \div GL$; and if $d =$ the length of a given pendulum, then (per quotation) the time of deſcribing MN is to that of half a vibration of this pendulum, as $\sqrt{QS \div v} = \sqrt{GL} \div 2z\sqrt{gp}$ to $\sqrt{d \div g}$; conſeq. the number of vibrations made by the ſtring while the pendulum vibrates once, will be $= 2z\sqrt{dp \div GL}$.

Corollary 1. If the weight w be inconſiderable with reſpect to the ſtring (for they are both ſuppoſed inconſiderable in reſpect of p, otherwiſe the ſolution muſt be on quite other principles), then RP nearly $=$ AP, $2z = m$, and the number of vibrations $= m\sqrt{dp \div GL}$, as determined by Dr. Brook Taylor.

Corol. 2. If the weight of the ſtring be inconſiderable with reſpect to w, then ſince RP is inconſiderable in reſpect of AR or AP, $z^{-1} = t$, $l = Lz^{-2} = wLG^{-1}$, $G = wz^2$, and the number of vibrations $= 2\sqrt{dp \div wL}$, the theorem of Dr. John Bernoulli.

The ſame by Mr. Wm. Herſchel.

Let ACB $=$ GEH $= a$ length of the ſtring, $m =$ its weight, $w =$ weight that ſtretches it, $s = 16\frac{1}{12}$ feet, DI $= x$, IL $= y$, DK $= z$, EF $= v$. EC $= R$, and DC $= r$. Then $\sqrt{2sw \div am} =$ number of vibrations in one ſecond.



To find the effect of a ſmall given weight n faſtened to the middle, we muſt conſider, that its power of retarding the vibrations of the ſtring in that place, will be to its power of retarding them if it were diffuſed all over the ſtring equally, as the rect. ra to the area ADBCA $= A$. To illuſtrate this, ſuppoſe the ſtring to be a line without weight, and let m be divided into ſeveral equal parts placed at equal diſtances at k k k &c. Now ſince the momentum of a body is as veloc. × weight, and that when the ſtring vibrates, the velocity of each part is kh, ∵ if the number of parts be infinitely increaſed, they will form the ſtring a, and all the kh's × all the particles $= mA$. But if, inſtead of the equal velocities, all the particles are ſuppoſed to move with the velocity r, that is if all the kh's $=$ ſo many r's, then all the particles × all the r's, or mra, will expreſs the mom. of m when it is all in C. But $mA : mra :: A : ra$.

Now by the nature of the harmonic curve (granting it to be as defined pa. 251 Dr. Smith's Harmonics) y is always $= v$, and by ſim. ſectors $r : R :: z : v = Rz \div r$, ∵ the flux. of the area DIL $= y\dot{x} = v\dot{x} = R\dot{z}$

÷ r, the fluent of which is $Rr^{-1} \times : xz + \sqrt{2rx - x^2} - 2r \times$ arc to d. r and ſine $\sqrt{\frac{1}{2}rx}$ = area DIL; and when $x = r$, then $xz = 2r$ × arc to ſine $\sqrt{\frac{1}{2}rx}$, and the fluent becomes barely Rr = the area DCB. ut c (3·14159 &c.) : 1 :: $a : R = a \div c$, ∴ $A = 2\text{DCB} = 2ar \div c$.

Having obtained A, we ſhall be able to reduce n to the ſame condition nder which m acts; for $2arc^{-1} : ar :: n : \frac{1}{2}cn$. And this being put nto the former expreſſion, gives $\sqrt{2sw \div a.m + \frac{1}{2}cn}$ = the number f vibrations in one ſecond.

Scholium. When a and w are given, the times of vibrations are in the ubduplicate ratio of the weight of the ſtring; theref. to find what n nuſt be to cauſe a given interval, for inſtance a ſemitone, or a tone, we ave $15 : 16 :: \sqrt{m} : \sqrt{m + \frac{1}{2}cn}$, and hence $n = 62m \div 225c = \cdot08771m$ for a ſemitone; alſo $n = \cdot16888m$ for a tone.—The experiment is eaſily made by weighing a little globe of wax, and ſqueezing t on the middle of the ſtring; when the ſound will be found a ſemitone or one lower as n is put on $= \cdot08771m$ or $= \cdot1688m$. As nothing is ere allowed for the reſiſtance of the air and the diſturbance in the virations, we cannot expect the experiment to anſwer with larger interals, as the ſound muſt ſoon become too flat and unintelligible if n be nlarged. It muſt alſo be obſerved that the above ſolution is not to be onſidered as mathematically true, but as a practical ſolution approaching ear the truth: ſince the chord loaded with a ſingle weight cannot ibrate exactly in the ſame curve as when unloaded, nor as when uniformly oaded throughout.

True ſolu. were alſo given by Mr. J. Edwards and Mr. Wm. Sewell.

NEW QUESTIONS.

I. Queſtion 757 by Mr. Stephen Roberts.

Fair Phillida ſighs for---and ſighs for in vain.
Ye fair-ones, oh pity her woes;
And from thoſe equations the object explain,
That ſo greatly diſturbs her repoſe.

$$\left.\begin{array}{l} x + y = z \\ z^3 - x^3 + y^3 = 470 \\ z^3 - x^3 - y^3 = 468 \end{array}\right\}$$

Where the values of x, y, z, ſhew the letters in the alphabet that compoſe the name.

II. Queſtion 758 by Mr. Wm King, of Lofthouſe.

Given the difference of the diſtances of the hour-lines of 8 and 9 in the forenoon, om the meridian, on a horizontal dial, equal to 15 degrees 25 minutes. Required e latitude of the place the dial was made for.

III. Queſtion 759 by Mr. Rich. Rawle, of Redruth.

There are two northern latitudes, both under the ſame meridian, the one being as r from the equator as the other from the pole: now on the 21ſt of June the ſun ſes 1 hour 18 minutes ſooner at the place in the greater latitude than at the other. equired both latitudes.

IV. Queſtion 760 by Mr. Jonathan Mabbott, Exciſe-Officer.

Required, without ſubſtituting for the ratio of the fluxions, the relaon of x and y from $a^2\dot{x}^4 + y^2\dot{y}^4 = b^2\dot{y}^2\dot{x}^2 + 2ay\dot{y}^2\dot{x}^2$; ſuppong x and y to begin together.

V. Queſtion 761 by Mr. John Willes of Marſk.

Being on the ſands at Marsk, which are truly horizontal, I ſaw a ſea-mew flying, which I threw a ſtone with a velocity of 60 feet per ſecond, and obſerved that it ſt touched the bird in the vertex of its path. It is required to find the angle of [illegible]ction, the time the ſtone was in motion, and the height of the bird; the ſum of e [illegible] height and the horizontal diſtance of the ſtone's projection being a maximum.

VI. Queſtion 762 by Mr. Nathan Parnel.

Given the four ſides of a trapezium, which has two of its adjacent angles equa each other, to conſtruct it.

VII. Queſtion 763 by Mr. Michael Taylor.

To find the ſum of the infinite ſeries $\frac{2}{1.3} + \frac{1}{3.5.2} + \frac{1.3}{4.5.7.2^2} + \frac{1.3.5}{4.6.7.9\ 2^3} + \frac{1.3.5.7}{4.6.8.9.11.2^4}$ &c. in finite terms.

VIII. Queſtion 764 by the Rev. Mr. Lawſon.

Having two circles given in magnitude and poſition, and a point in the right joining their centers; to draw through that point a right line to cut the circles ſuch a manner, that the chords ſhall have a given ratio.

Note, this queſtion, relating to circles, is analogous to the 15th problem anne to a diſſertation on the Geometrical Analyſis of the Antients, ſold by Nourſe, &c. relative to right lines, which is there propoſed in the caſe of the rhombus, but is applicable to all parallelograms in general.

IX. Queſtion 765 by Mr. J. Dymond.

If one end of an indefinite line move round the circumference of a given cir and continually paſs through a given point; it is required to find the nature of the curve deſcribed by a given point in the revolving line.

X. Queſtion 766 by Mr. Thomas Moſs.

To draw a right line through a given point E within a given triangle ABC, cutting two of its ſides ſo, that the ſum of the perpendiculars GM, HN, drawn from the points of interſection G and H to the other ſide AB, ſhall be the greateſt poſſible.

XI. Queſtion 767 by Mr. Rob. Phillips.

Suppoſe the quadrant ABC of a circle, whoſe radius CA or CB is 100 feet, to revolve about the perpendicular radius AC with a uniform velocity, making each revolution in five ſeconds of time, whilſt a ring at the upper end at B is left to deſce along the curve BA by its own gravity: it is required to determine in what time will arrive at the loweſt point A.

XII. Queſtion 768 by Mr. George Sanderſon.

In a given circle to inſcribe the greateſt triangle that can have two of its ſides in given ratio.

XIII. Queſtion 769 by Plus Minus.

Had I been at the antipodes with Capt. Cook, I might have won a wager of him; for he ſays, that he then was as far removed from his friends in London as poſſible. Now I deſire to know what courſe he ought to ſteer, and how far from the place where he then was, to be as far from London as poſſible; and how much farther he would then be than when at the antipodes; ſuppoſing the polar diameter of the eart to be to the equatorial diameter, as 229 to 230, and that the latter is 8000 miles.

XIV. Queſtion 770 by the Rev. Mr. Wildbore.

A ſemicircle and a point in its diameter or baſe being given; to draw another ſemicircle through the given point, having its center between it and the angular point of the given ſemicircle that is fartheſt from it, ſo that a line being drawn to touch it, and tend to the ſaid angular point, the part of that line intercepted by the ſemicircle may be a maximum: and to give the geometrical demonſtration. This being wanted to complete the determinations in the reſtitution of the 2d book of Apollonius on inclinations.

XV. Or Prize, Queſtion 771 by Nautious.

Let the ſphere be projected by an eye at the center, on a plane touching it; and let the diſtance between the pole of projection and the point where any angle is formed by two great circles, one of which paſſes through the ſaid pole, be given; it is required to draw the repreſentation of the other circle geometrically, ſo that the difference between the angle formed by the circles on the ſphere and its repreſentation on the plane, may be the greateſt poſſible.

⁂ The prizes have been determined by lot as follows. Firſt, for the ſolution of the prize queſtion, to the Rev. Mr. Wildbore 12, and to Mr. William Sewell 8 diaries.---2dly, for the ſolution of the prize enigma, to Mrs. Jane Roberts 10, and to Miſs Diana Browne 8 diaries.---3dly, for the general ſolution of the enigmas, to the Rev. Mr. T. Baker 10, and to Mr. J. Wilſon 10 diaries.---4thly, for the ſolution of the queries, &c. to Mr. John Jackſon 8, and to Mr. Geo. Jefferſon 8 diaries. All of whom will pleaſe to order them to be called for at Stationers-hall, London.---All Letters for the uſe of the Diary muſt be directed thus, "For the Ladies' Dia Stationers-hall, London."

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